

# JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH

Volume 2, Issue 1 · 2019

## **Volume Editor**

Brooke Fisher Liu  
University of Maryland

## **Editorial Assistant**

Samantha J. Stanley  
University of Maryland

## **Editor-in-Chief**

Timothy L. Sellnow  
University of Central Florida

## **Associate Editor**

Patric R. Spence  
University of Central Florida

## **Design and Layout**

Concord Editorial and Design



Published by the Nicholson School of Communication and  
Media at the University of Central Florida in association with the  
International Crisis and Risk Communication Conference

The *Journal of International Crisis and Risk Communication Research* (JICRCR) is a biannual peer-reviewed, open access publication of the Nicholson School of Communication and Media at the University of Central Florida and is an extension of the International Crisis and Risk Communication Conference (ICRCC).

The *Journal of International Crisis and Risk Communication Research* (Print: ISSN 2576-0017) is published once a year in print and biannually online in March and October (Online: ISSN 2576-0025). The print volume contains both issues from the calendar year. Institutional, organizational, and individual subscribers are invited to subscribe to the print edition using the following mailing address:

Journal of International Crisis and Risk Communication Research (JICRCR)  
Nicholson School of Communication and Media  
University of Central Florida  
12405 Aquarius Agora Dr.  
Orlando, FL 32816-1344, USA

Print subscription rates in the United States:

Individuals: 1 year (2 issues in one volume), \$40

Libraries and organizations: 1 year (2 issues in one volume), \$75

Checks should be made payable to the University of Central Florida. If subscribing outside of the United States, please contact the Editor-in-Chief for the current rate.

Copyright © 2019 Journal of International Crisis and Risk Communication Research. All rights reserved.

In consideration for publication of the article, the author(s) assign to JICRCR the copyright to the article, subject to the expansive personal-use exceptions. All articles in JICRCR are open access and after a six-month embargo the article may be distributed under personal-use exceptions.

Reproduction, posting, transmission, or other distribution or use of the article or any material therein, in any medium as permitted by a personal-use exemption, or by written agreement of JICRCR, requires credit to JICRCR as copyright holder (e.g., © 2019 JICRCR).

After a six-month embargo or the publication of a new issue of JICRCR (which ever happens first), author(s) and others are permitted to share, post, and redistribute articles and do not require further permission from JICRCR, provided there are no alterations to the format or content of the articles, including the copyright notification. Authors and others are not granted permission to modify materials or use them for commercial purposes.

For a complete explanation of permissions and copyright, please visit: [www.jicrcr.com](http://www.jicrcr.com).



# JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH

Volume 2, Issue 1 • 2019

Editor's Essay: The Critical Need for Crisis and Risk  
Communication Research ..... 7

*Brooke Fisher Liu*

Crisis Information Seeking and Sharing (CISS): Scale  
Development for Measuring Publics' Communicative  
Behavior in Social-Mediated Public Health Crises ..... 13

*Yen-I. Lee and Yan Jin*

A Measure of Perceived Severity in Organizational Crises:  
A Multidimensional Scale Development and Validation ..... 39

*Ziyuan Zhou, Eyun-Jung Ki, and Kenon A. Brown*

Engaging Communities in Emergency Risk and Crisis  
Communication: A Systematic Review and Evidence Synthesis ..... 61

*Julie M. Novak, Ashleigh M. Day, Pradeep Sopory,  
Lee Wilkins, Donyale Padgett, Stine Eckert, Jane Noyes,  
Tomas Allen, Nyka Alexander, Marsha Vanderford,  
and Gaya Gamhewage*

The Effects of Community Size, Control Over Agenda,  
and Contextual Variables on Zika Virus Preparation of Public  
Information Officers at Local Public Health Departments ..... 97

*Elizabeth Johnson Avery*

From Hoax as Crisis to Crisis as Hoax: Fake News and  
Information Disorder as Disruptions to the Discourse of  
Renewal. .... 121

*Timothy L. Sellnow, Adam Parrish, and Lauren Semenas*



# **JOURNAL OF INTERNATIONAL CRISIS AND RISK COMMUNICATION RESEARCH**

## **Editorial Board**

Kathryn Anthony, University of Southern Mississippi  
Lucinda Austin, University of North Carolina, Chapel Hill  
William Benoit, University of Alabama at Birmingham  
Melissa Dodd, University of Central Florida  
Julie Demuth, National Center for Atmospheric Research  
Elizabeth Avery Foster, University of Tennessee  
Finn Frandsen, Aarhus University  
Julia Fraustino, West Virginia University  
Amiso George, Texas Christian University  
Rebecca Hayes, Illinois State University  
Robert Heath, University of Houston  
J. Suzanne Horsley, University of Alabama  
Joel Iverson, University of Montana  
Yan Jin, University of Georgia  
Winni Johansen, Aarhus University  
Bengt Johansson, University of Gothenburg  
Eyun-Jung Ki, University of Alabama  
Sora Kim, Chinese University of Hong Kong  
Kenneth Lachlan, University of Connecticut  
Robert Littlefield, University of Central Florida  
Leesa Lin, Harvard University  
Xialing Lin, Pennsylvania State University–Scranton  
Amisha Mehta, Queensland University of Technology  
Glen Nowak, University of Georgia  
H. Dan O'Hair, University of Kentucky  
Henrik Olinder, Swedish Civil Contingencies Agency (MSB)  
Hye-Jin Paek, Hanyang University  
Tyler Page, Mississippi State University  
Augustine Pang, Singapore Management University  
Laura Pechta, Centers for Disease Control and Prevention  
Elizabeth Petrun Sayers, RAND  
Kathy Rowan, George Mason University  
Andreas Schwarz, Ilmenau University of Technology

Matthew Seeger, Wayne State University  
Deanna Sellnow, University of Central Florida  
Patric Spence, University of Central Florida  
Toni van der Meer, University of Amsterdam  
Steven Venette, University of Southern Mississippi  
Orla Vigsö, University of Gothenburg  
Sifan Xu, University of Tennessee



## Editor's Essay: The Critical Need for Crisis and Risk Communication Research

Brooke Fisher Liu

Department of Communication, University of Maryland College Park, College Park, Maryland, USA

### ABSTRACT

Risk and crisis communication are growing areas of scholarship ripe for multidisciplinary contributions. In this essay, the Volume 2 editor reflects on the primary purpose of the *Journal of International Crisis and Risk Communication Research* and the areas of scholarship the journal promotes. The editor offers advice for researchers and professionals interested in publishing in the journal. Additionally, the editor calls for the community to continue to submit their best research and to support the development of the next generation of risk and crisis communication scholars.

**KEYWORDS:** Risk; crisis; emergency

As I write this essay, I am on a plane flying from the United States to Hong Kong on the 17th anniversary of the September 11, 2001, terrorist attacks. Hurricane Florence is barreling toward the East Coast of the United States, and Super Typhoon Mangkut is predicted to make a direct hit on Hong Kong this weekend. The societal importance of risk and crisis communication has never been clearer.

The September 11 attacks and Hurricane Katrina occurred while I was in graduate school and inspired my interest in government risk and crisis communication research. At the time, we had insufficient scholarship, especially scholarship that might help governments prepare their communities to respond to disasters. Scholarship on nonprofit risk and crisis communication was also lacking, and corporate crisis communication research was in the early stages of theoretical development. Today, we have a proliferation of research on risk and crisis

---

**CONTACT** Brooke Fisher Liu • E-mail: [bfliu@umd.edu](mailto:bfliu@umd.edu) • Department of Communication, University of Maryland College Park, 4300 Chapel Dr., College Park, MD 20740, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

communication on a variety of topics, including infectious diseases, public health interventions, disasters, terrorism, environmental issues, and misdeeds by organizations and their leaders. We have become a large, vibrant community. Yet, we still have more questions than answers about how to effectively communicate about risks and crises.

This journal provides the first dedicated outlet for crisis and risk communication scholarship. As an open access journal, it also disseminates our scholarship for researchers and professionals around the world.

As former editor Dr. Matt Seeger (2018) noted,

this journal, more than 15 years in the making, grew out of a recognition that crisis and risk communication are growing research topics with important applied, global, and interdisciplinary dimensions. This diverse body of research follows a variety of methodological and epistemic traditions, and although other traditional outlets for communication scholarship have been open to publishing crisis and risk research, the volume of work warrants a dedicated journal. (p. 8)

We are a journal for all scholars and professionals interested in risk and crisis communication, and we welcome research from disciplines such as emergency management, emergency medicine, business, public health, sociology, data sciences, political science, psychology, public administration, and, of course, communication. We are a multi-methodological journal, supporting research approaches ranging from historical/critical, qualitative, or quantitative to computational methods. Additionally, we support state-of-the-art review essays.

As the second editor of this journal, I often receive queries about what type of research is and is not deserving of publication in this journal. As a community, we get to answer that question by the work that we submit to the journal. In case that answer is unsatisfactory for authors interested in submitting their work to our journal, let me offer a few pieces of advice.

First, this is not the journal to send the paper that was rejected from all other journals. Nor is it the place to submit the small amount of remaining data from a project after publishing key research findings



elsewhere. We are building the first and premier journal for crisis and risk communication research. We need the community's support in achieving this mission.

Second, this journal seeks to develop new approaches, theories, and insights about crisis and risk communication. In other words, we are unlikely to publish research that tests existing knowledge with limited advancement.

Third, this journal takes an expansive view on crisis and risk communication. For detailed discussions defining crisis and risk communication, see Coombs (2014), Rasmussen and Ihlen (2017), and Reynolds and Seeger (2005). We are interested in scholarship that focuses on organizations and their leaders. Additionally, we are interested in scholarship on communities and publics, including how they interact with organizations. We advance scholarship on preparedness, response, and recovery.

Fourth, and perhaps most importantly, we are an international journal. We warmly encourage research from around the globe, including from new and established scholars and professionals.

Lastly, our journal has a dual mission of extending theory and practice. Thus, all submitted manuscripts must advance the science of crisis and risk communication, including through improving professionals' knowledge about practice.

In this third issue of the journal, we feature scholarship that advances measurement of risk and crisis communication constructs and understanding of emergency risk communication. Lee and Jin's study develops a new scale for crisis information seeking and sharing and then validates this scale in the context of public health crises. Risk and crisis communication during public health emergencies remains an undertheorized and undermeasured area of our scholarship, which this study helps address.

Zhou, Ki, and Brown's study proposes a definition of perceived crisis severity and develops a new, validated scale to measure this construct. Crisis severity is at the heart of much of our research on attribution of crisis responsibility, but this is the first study to operationalize and measure that construct.

Novak and colleagues' study provides a mixed-method systematic

review of engaging communities in emergency risk and crisis communication. Through providing a detailed review, this study provides critical knowledge for professionals to better engage their communities. Findings also identify key research gaps, given that we rarely take a community engagement approach to our research.

Avery's article extends the crisis and emergency risk communication (CERC) model to the context of public information officers responding to a global pandemic. Results illuminate risk and crisis communication challenges that public health departments face and extend the CERC model.

Sellnow, Parrish, and Semenas's invited essay examines how claims of crises as hoaxes disrupt the discourse of renewal, which inhibits communities' crisis recovery. The study investigates a unique crisis type and extends theory. Like all articles in this issue, it clearly advances research and practice.

When I was in graduate school, Drs. Timothy Sellnow (the journal's editor-in-chief) and Matthew Seeger (the journal's former editor) were my role models. It is an honor to work with them on building this journal. In doing so, we provide a new home for the multidisciplinary research on crisis and risk communication, including fostering the next generation of scholars. Through our research, we can contribute to building a more agile and resilient society.

**Dr. Brooke Liu** researches how government messages, media, and interpersonal communication can motivate people to successfully respond to and recover from disasters. Liu is an associate professor of communication at the University of Maryland, where she leads the Risk Communication and Resilience Research Program at START, a U.S. Department of Homeland Security Center of Excellence. Liu's research has been funded by government agencies such as the Defense Advanced Research Projects Agency (DARPA), the Department of Homeland Security (DHS), the National Science Foundation (NSF), and the National Oceanic and Atmospheric Administration (NOAA).

## References

- Coombs, W. T. (2014). *Ongoing crisis communication: Planning, managing, and responding*. Thousand Oaks, CA: Sage.
- Rasmussen, J., & Ihlen, Ø. (2017). Risk, crisis, and social media: A systematic review of seven years' research. *Nordicom Review*, 38, 1–17. <https://doi.org/10.1515/nor-2017-0393>
- Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10, 43–55. <https://doi.org/10.1080/10810730590904571>
- Seeger, M. W. (2018). Answering the call for scholarship: The *Journal of International Crisis and Risk Communication Research*. *Journal of International Crisis and Risk Communication Research*, 1, 7–10. <https://doi.org/10.30658/jicrcr.1.1.1>



communication on a variety of topics, including infectious diseases, public health interventions, disasters, terrorism, environmental issues, and misdeeds by organizations and their leaders. We have become a large, vibrant community. Yet, we still have more questions than answers about how to effectively communicate about risks and crises.

This journal provides the first dedicated outlet for crisis and risk communication scholarship. As an open access journal, it also disseminates our scholarship for researchers and professionals around the world.

As former editor Dr. Matt Seeger (2018) noted,

this journal, more than 15 years in the making, grew out of a recognition that crisis and risk communication are growing research topics with important applied, global, and interdisciplinary dimensions. This diverse body of research follows a variety of methodological and epistemic traditions, and although other traditional outlets for communication scholarship have been open to publishing crisis and risk research, the volume of work warrants a dedicated journal. (p. 8)

We are a journal for all scholars and professionals interested in risk and crisis communication, and we welcome research from disciplines such as emergency management, emergency medicine, business, public health, sociology, data sciences, political science, psychology, public administration, and, of course, communication. We are a multi-methodological journal, supporting research approaches ranging from historical/critical, qualitative, or quantitative to computational methods. Additionally, we support state-of-the-art review essays.

As the second editor of this journal, I often receive queries about what type of research is and is not deserving of publication in this journal. As a community, we get to answer that question by the work that we submit to the journal. In case that answer is unsatisfactory for authors interested in submitting their work to our journal, let me offer a few pieces of advice.

First, this is not the journal to send the paper that was rejected from all other journals. Nor is it the place to submit the small amount of remaining data from a project after publishing key research findings

elsewhere. We are building the first and premier journal for crisis and risk communication research. We need the community's support in achieving this mission.

Second, this journal seeks to develop new approaches, theories, and insights about crisis and risk communication. In other words, we are unlikely to publish research that tests existing knowledge with limited advancement.

Third, this journal takes an expansive view on crisis and risk communication. For detailed discussions defining crisis and risk communication, see Coombs (2014), Rasmussen and Ihlen (2017), and Reynolds and Seeger (2005). We are interested in scholarship that focuses on organizations and their leaders. Additionally, we are interested in scholarship on communities and publics, including how they interact with organizations. We advance scholarship on preparedness, response, and recovery.

Fourth, and perhaps most importantly, we are an international journal. We warmly encourage research from around the globe, including from new and established scholars and professionals.

Lastly, our journal has a dual mission of extending theory and practice. Thus, all submitted manuscripts must advance the science of crisis and risk communication, including through improving professionals' knowledge about practice.

In this third issue of the journal, we feature scholarship that advances measurement of risk and crisis communication constructs and understanding of emergency risk communication. Lee and Jin's study develops a new scale for crisis information seeking and sharing and then validates this scale in the context of public health crises. Risk and crisis communication during public health emergencies remains an undertheorized and undermeasured area of our scholarship, which this study helps address.

Zhou, Ki, and Brown's study proposes a definition of perceived crisis severity and develops a new, validated scale to measure this construct. Crisis severity is at the heart of much of our research on attribution of crisis responsibility, but this is the first study to operationalize and measure that construct.

Novak and colleagues' study provides a mixed-method systematic

review of engaging communities in emergency risk and crisis communication. Through providing a detailed review, this study provides critical knowledge for professionals to better engage their communities. Findings also identify key research gaps, given that we rarely take a community engagement approach to our research.

Avery's article extends the crisis and emergency risk communication (CERC) model to the context of public information officers responding to a global pandemic. Results illuminate risk and crisis communication challenges that public health departments face and extend the CERC model.

Sellnow, Parrish, and Semenas's invited essay examines how claims of crises as hoaxes disrupt the discourse of renewal, which inhibits communities' crisis recovery. The study investigates a unique crisis type and extends theory. Like all articles in this issue, it clearly advances research and practice.

When I was in graduate school, Drs. Timothy Sellnow (the journal's editor-in-chief) and Matthew Seeger (the journal's former editor) were my role models. It is an honor to work with them on building this journal. In doing so, we provide a new home for the multidisciplinary research on crisis and risk communication, including fostering the next generation of scholars. Through our research, we can contribute to building a more agile and resilient society.

**Dr. Brooke Liu** researches how government messages, media, and interpersonal communication can motivate people to successfully respond to and recover from disasters. Liu is an associate professor of communication at the University of Maryland, where she leads the Risk Communication and Resilience Research Program at START, a U.S. Department of Homeland Security Center of Excellence. Liu's research has been funded by government agencies such as the Defense Advanced Research Projects Agency (DARPA), the Department of Homeland Security (DHS), the National Science Foundation (NSF), and the National Oceanic and Atmospheric Administration (NOAA).

## References

- Coombs, W. T. (2014). *Ongoing crisis communication: Planning, managing, and responding*. Thousand Oaks, CA: Sage.
- Rasmussen, J., & Ihlen, Ø. (2017). Risk, crisis, and social media: A systematic review of seven years' research. *Nordicom Review*, 38, 1–17. <https://doi.org/10.1515/nor-2017-0393>
- Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10, 43–55. <https://doi.org/10.1080/10810730590904571>
- Seeger, M. W. (2018). Answering the call for scholarship: The *Journal of International Crisis and Risk Communication Research*. *Journal of International Crisis and Risk Communication Research*, 1, 7–10. <https://doi.org/10.30658/jicrcr.1.1.1>







# Crisis Information Seeking and Sharing (CISS): Scale Development for Measuring Publics' Communicative Behavior in Social-Mediated Public Health Crises

Yen-I Lee  and Yan Jin

Grady College of Journalism and Mass Communication, University of Georgia,  
Athens, Georgia, USA

## ABSTRACT

This study first refines the conceptual framework of publics' communicative behavior in social-mediated health crises. Then two multiple-item scales for measuring publics' health crisis information seeking and sharing (CISS) are developed and tested by employing online survey data sets from a random national sample of 279 adults and 280 adults in the United States, respectively. Results indicate seven types of crisis information seeking behavior and 17 types of crisis information sharing behavior crossing over platforms, channels, and information sources. The CISS scales provide a valid and reliable tool for crisis communication researchers and practitioners to measure publics' information seeking and sharing activities in social-mediated public health crisis communication.

**KEYWORDS:** Crisis communication; health crisis; scale development; social media; information seeking and sharing

Public health crises, such as infectious disease outbreaks, whether ongoing (e.g., HIV/AIDS), recurring (e.g., seasonal influenza), or sporadic (e.g., SARS), can imperil the health of large numbers of individuals and severely threaten the social and economic well-being of affected publics and their communities (Morens & Fauci, 2013). The urgent need for effective public health crisis communication was highlighted in 2014, when the largest Ebola outbreak in history ravaged West Africa, and again in 2015–2016, as the Zika virus first arrived in the Western Hemisphere and spread rapidly throughout South America and in the United States. In addition to the infectious nature of such diseases,

---

**CONTACT** Yen-I Lee • E-mail: [yeni.lee25@uga.edu](mailto:yeni.lee25@uga.edu) • Grady College of Journalism and Mass Communication, University of Georgia, 120 Hooper St., Athens, GA 30602, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

fear-based conversations about them have the potential quickly to go viral and spread around the world (Dredze, Broniatowski, & Hilyard, 2016). Publics' communication needs in public health crises are more critical than ever (Thelwall & Stuart, 2007).

Crisis communication scholars have laid the theoretical foundation for understanding publics' immense and immediate communication needs, namely, information seeking, which addresses the need for information, and information sharing, which addresses the need for spreading information (Thelwall & Stuart, 2007). Crisis information and publics' communicative behavior regarding crisis information play a fundamental role in crisis escalation and can impact publics' understanding and interpretation of a crisis situation (Schultz & Raupp, 2010; Van der Meer, 2016). In the context of public health crises, Seeger (2006) pointed out that government health agencies' efforts have been directed toward merging an organization-reputation-focused crisis communication approach with risk communication that largely focuses on gaining publics' attention to health risks (Witte, 1995), gradually resulting in a more comprehensive approach called "crisis and emergency risk communication (CERC)" (Reynolds, Galdo, & Sokler, 2002). In discussing the Centers for Disease Control and Prevention's (CDC) Zika communication needs, Reynolds (2016) highlighted the importance of understanding what information people seek and how they seek information from health agencies to empower people/citizens to take control in health crisis situations.

Furthermore, *crisis information seeking* and *crisis information sharing* are identified by the social-mediated crisis communication (SMCC) model as two distinct constructs and as core behavioral outcomes of crisis communication online and offline (Jin & Liu, 2010; Liu, Austin, & Jin, 2011; Liu, Fraustino, & Jin, 2015, 2016; Liu, Jin, Briones, & Kuch, 2012). Despite the pivotal role communication plays in public health crises, significant knowledge gaps remain regarding the most effective strategies for communicating uncertainty and risk during emergencies like infectious disease outbreaks (Liu, Bartz, & Duke, 2016). These findings indicate the importance of further examining how and what types of online and offline communication channels publics seek and on which they share health crisis information to reduce uncertainty and risk during health crises.

In terms of the measurement of crisis information communicative behavior, previous SMCC research, primarily focused on organizational crises and terrorist attacks, has assessed publics' communicative behavior at the manifest variable level, using sets of individual action items representing information seeking and sharing (Austin, Liu, & Jin, 2012; Jin, Liu, & Austin, 2014; Liu et al., 2016; Liu, Jin, & Austin, 2013). Only a recent study identified clusters of publics' information seeking behavior (i.e., information seeking on social media vs. on television) and information sharing behavior (i.e., information sharing on social media vs. through interpersonal channels) at the latent construct level (Jin, Fraustino, & Liu, 2016). However, the structures and qualities of those crisis information seeking and sharing (CISS) clusters need to be further assessed and improved, as Jin and colleagues (2016) acknowledged.

To respond to the need to identify more stable structures of information seeking and information sharing actions, this study develops and tests two multiple-item scales for measuring publics' CISS in social-mediated public health crises based on two survey data sets from a random sample of adults in the United States. The CISS scales provide a valid and reliable tool for public relations researchers and crisis communication managers to measure publics' communicative behavior in social-mediated public health crises.

### **Conceptualization of CISS in Social-Mediated Public Health Crises**

#### **Crisis Information Seeking Behavior**

*Information seeking*, as an attentive and active type of public communication behavior (Moon, Rhee, & Yang, 2016), refers to “planned scanning of the environment for messages about a specified topic” (Clarke & Kline, 1974, p. 233). Some researchers have operationalized health crisis information seeking at the cognitive and affective levels, focusing on perceived channel importance for seeking health crisis information (Avery, 2010) and interest in obtaining health crisis information (Spence, Lachlan, Edwards, & Edwards, 2016). Other researchers have approached health crisis information at the behavioral level, examining information seeking as the frequency of use of different channels

(Wang & Ahern, 2015) and the likelihood of channel use for information seeking (Kuttschreuter et al., 2014).

Health information seeking is defined as the action of searching and receiving messages that help “to reduce uncertainty regarding health status” and “construct a social and personal (cognitive) sense of health” (Tardy & Hale, 1998, p. 338). Existing literature on publics’ health information seeking has emphasized health information seeking through traditional mass media, health professionals, and interpersonal communication (Avery, 2010; Wang & Ahern, 2015). Recently, social media channels, such as Twitter, Facebook, blogs, and online videos, have been studied in terms of where publics seek health-related information for topics including the effects of information content of routine and crisis situations, vaccination during the H1N1 flu epidemic, and food-related risk (Kuttschreuter et al., 2014; Spence et al., 2016). These studies have indicated the need to fully examine how and where publics seek information across a variety of social media platforms and communication channels, in particular when a sporadic and urgent health crisis situation occurs.

In a field experiment using a representative national sample, Liu and colleagues (2016) reported that after initial exposure to a disaster situation, crisis information sources seem to affect individuals’ intended crisis information seeking actions from television, local government websites, and federal government websites. Jin and colleagues (2016) further identified two clusters for publics’ crisis information seeking behavior across different information sources, namely, local media, national media, local government, and federal government. The first cluster, *crisis information seeking on social media*, included online video, Facebook page updates, Twitter, others’ blogs, and picture sharing sites. The second cluster focused on *crisis information seeking on television*. These studies have shown the importance of social media and mass media information sources for publics seeking crisis information. However, the question remains, how and where do publics seek health crisis information across traditional media, social media, and interpersonal information sources?

### Crisis Information Sharing Behavior

Researchers have examined the role of social media in information sharing. Lariscy, Avery, Sweetser, and Howes (2009) defined *social media* as “online practices that utilize technology and enable people to share content, opinions, experiences, insights, and media themselves” (p. 314). Despite the lack of consensus across disciplines on how to define social media, public relations scholars have endorsed that “social media combine an eclectic range of online word-of-mouth forums including blogs, discussion boards and chat rooms; consumer-to-consumer e-mail; consumer product or service ratings websites and forums; Internet discussion boards and forums; moblogs; and social networking websites” (Mangold & Faulds, 2009, p. 358; see also Palenchar & Freberg, 2012). During a crisis, publics can be engaged with organizations via their “views, likes, comments, and shares” in response to crisis information disseminated by organizations and other sources on social media platforms (Smith & Gallicano, 2015, p. 82).

In times of public health crisis, health agencies often disseminate health crisis information and preventive action recommendations through various communication channels to reach different target publics that can help further share the health crisis information with other individuals and groups (Vijaykumar, Jin, & Nowak, 2015). Existing empirical studies, however, have only provided evidence for crisis information sharing on a single platform of social media, such as Twitter (Freberg, Saling, Vidoloff, & Eosco, 2013; Shklovski, Burke, Kiesler, & Kraut, 2010; Sutton, 2010). As a result, findings cannot be applied to crisis information sharing across different social media platforms. In addition, despite the fact that research has repeatedly revealed that both information form and source can influence publics’ CISS behaviors (Austin et al., 2012; Lachlan, Spence, & Seeger, 2009; Liu et al., 2013, 2015, 2016; Schultz, Utz, & Göritz, 2011; Utz, Schultz, & Glocka, 2013), the current literature in public health crisis lacks measurement specification in terms of where and how health crisis information sharing actions take place across various communication channels and different platforms.

Liu and colleagues (2016) conducted a field experiment on disaster

communication using a representative national sample. The key findings revealed that regardless of crisis information form and source, individuals reported the strongest intentions to share information about the disaster predominately via offline interpersonal channels rather than through online organizational and personal channels. Jin and colleagues (2016) further identified two clusters for publics' crisis information sharing behavior. First was *crisis information sharing on social media*, including posting on Facebook; re-tweeting at least one tweet, such as a government Facebook post about the crisis; sharing a government Facebook post about the crisis on their own Facebook page; commenting on a government Facebook page about the crisis; posting information on their friends' Facebook pages or groups about the crisis; tweeting about the crisis; writing a blog post on their own blog about the crisis; posting a comment on someone else's blog about the crisis; making a comment on someone else's online video about the crisis; and uploading a picture related to the crisis on a dedicated photo sharing site. Second was *information sharing through interpersonal channels*, including telling people they know via face-to-face conversations about the crisis, telling people they know by e-mailing them about the crisis, calling people they know by phone to talk about the crisis, and texting people they know about the crisis. These findings indicate the need for crisis communication researchers to further examine how and where publics share health crisis information across different social media platforms, such as Instagram, Pinterest, Twitter, and Facebook, because of the different features of each social media platform.

### **CISS Theoretical Framework**

The implications of pioneering studies in crisis communication are twofold. First, information seeking and sharing are two constructs composed of multiple actions taken by publics that need to be assessed at the behavioral level (Jin et al., 2016; Liu et al., 2016). Second, to comprehensively capture publics' CISS actions, researchers should not only include channels and platforms of crisis information but also consider the ownership or source of different online channels and platforms (Jin et al., 2016; Liu et al., 2016). However, existing studies have only used hypothetical terrorist attack cases to examine publics' information

seeking and sharing behaviors and only examined two social media platforms (i.e., Facebook and Twitter). These findings do not provide a full picture of how publics use different communication channels from different sources to seek and share health crisis information.

To fill this research gap, this study proposed a refined theoretical framework for CISS in public health crises. The CISS framework posits that crisis information seeking and sharing actions should be examined at the behavioral level as core communicative behavior outcomes of public health crisis communication. It takes publics' varied communication activities into account to capture a fuller spectrum of their CISS actions: (a) communication via online public channels (e.g., different social media platforms and websites) and interpersonal channels (e.g., texting and phone calls) and (b) communication activities engaging different crisis information sources (e.g., traditional news media, health organizations, and peers).

Therefore, based on this proposed CISS framework, as a first step of scale development for measuring publics' communicative behavior in social-mediated public health crises, this study focused on how to measure publics' information seeking and sharing actions taken via online platforms and offline channels and across traditional news media, health organization sources, and peer sources.

## **Method and CISS Scale Development**

### **Initial CISS Items and Procedures**

Based on existing literature of crisis information seeking and information sharing in SMCC (Austin et al., 2012; Jin et al., 2016; Liu et al., 2013; Liu, Fraustino et al., 2016), a 12-item scale of social-mediated crisis information seeking and a 21-item scale of social-mediated crisis information sharing (CISS) in public health crisis were generated (see Appendixes A and B).

Data were collected using Qualtrics survey panels in the context of an infectious disease outbreak (i.e., the spread of Zika virus as a health threat to U.S. residents) in April 2016, for a total of 279 U.S. adults in Sample 1 and 280 U.S. adults in Sample 2. Survey participants were randomly assigned to read 1 of 12 crisis information messages.



Messages included the same text, “Zika is an infectious disease spread by mosquitos,” but a varied message frame (loss vs. gain), image type (photo vs. infographic), and information source (traditional media vs. health organization vs. peer). Given the context of public health crises, the Centers for Disease Control and Prevention (CDC) was used as the representative government health agency directly involved with Zika crisis communication to publics. The condition variables assessed for a separate study were not included, as this study was solely interested in identifying the clusters and patterns of publics’ communicative behavior. In other words, this study focused only on how and where publics sought and shared health crisis information across different social media platforms and communication channels.

After reading about the Zika crisis, participants were asked to respond to survey questions regarding their level of agreement or disagreement with each of the listed information seeking and sharing actions. Participants’ assessments of their agreement with items regarding their information seeking and information sharing behaviors were measured on a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). For each item, participants were provided “N/A” as an answer choice option if they thought that any question was not applicable to them. Appendixes A and B present the instructions and all survey items measuring health CISS, respectively.

Data gathered for crisis information seeking behavior and crisis information sharing behavior were further analyzed using scale development procedures as reported in the following sections.

### **Crisis Information Seeking Behavior**

**Item reduction.** Survey Sample 1 ( $N = 279$ ) was used for item reduction and exploratory factor analysis. As an initial reduction method, item distributions were examined aiming at eliminating highly skewed and unbalanced distributions due to insufficient information, limited variability, and highly unstable correlational results (Clark & Watson, 1995). The results of frequency tables and kurtosis indicated a normal distribution for all 12 items included in the scale.

Second, following the item-screening processes recommended by Matsunaga (2010) and the rule of thumb that factor correlation matrix values should be greater than .30 in large data sets (Field, 2013;

Meyers, Gamst, & Guarino, 2013), a principal component analysis (PCA) with promax rotation was used to generate a theoretical solution uncontaminated by unique and error variability. In addition, the analysis only emphasized the variance that each observed variable shared with other observed variables (Tabachnick & Fidell, 2001). All items had higher scores that represented stronger agreement with information seeking action on a 7-point Likert scale. Prior to data analysis, the Kaiser–Meyer–Olkin (KMO) test of sampling adequacy and the Bartlett test of sphericity were used to determine the appropriateness of factor analysis (Kaiser & Rice, 1974). The KMO level of .90 and the significance of the Bartlett test (.00) indicated that factor analysis was appropriate for the data (Kaiser & Rice, 1974). In this initial step, all components that had eigenvalues greater than 1 were extracted. The analysis returned two components with initial eigenvalues greater than 1 (explaining 65.25% of the variance).

**Exploratory factor analysis.** After the initial analysis for item reduction, because correlation between factors was expected theoretically, and communality better estimates the shared variance in a measurement (Costello & Osborne, 2005; Jin, Liu, Anagondahalli, & Austin, 2014; Meyers et al., 2013), an exploratory factor analysis (EFA) was performed using principal axis factoring with promax rotation on the 12 items of information seeking action. Items having factor loadings of less than .40 or cross-loading of the two components were considered poor and were eliminated (Tabachnick & Fidell, 2001). In addition, any items with a communality value less than .50 were dropped from the final solution (Meyers et al., 2013). As a result, five items (looking for more information from traditional news media, online videos, Facebook page updates, others' blogs, and primary health care provider) were deleted. Follow-up factor analyses on the remaining items suggested a 7-item scale with two underlying factors representing clusters of information seeking action for the Zika virus health crisis from social media platforms and interpersonal channels. Factor 1 is information seeking via social media platforms, including Twitter, Instagram, Pinterest, and Snapchat. Factor 2 is information seeking through interpersonal channels, including face-to-face and/or phone conversation, e-mailing people one knows, and texting people one knows.

The resulting subscales demonstrated internal consistency,  $\alpha = .93$

( $M = 3.38$ ,  $SD = 2.01$ ; four items for information seeking via social media platforms) and  $\alpha = .84$  ( $M = 4.10$ ,  $SD = 1.70$ ; three items for information seeking through interpersonal channels). The results matched Clark and Watson's (1995) recommendations for a coefficient alpha benchmark of .80. The results indicate that the 7-item instrument measuring information seeking behavior for the public health crisis through various social media platforms and interpersonal channels satisfied internal consistency within each factor and that the subscales for each cluster of platforms and channels were reasonable and parsimonious.

**Confirmatory factor analysis.** Survey Sample 2 ( $N = 280$ ) was used for confirmatory factor analysis. To identify the factor structure by conducting confirmatory factor analysis (CFA), AMOS 23 was used for these factors with a 7-item oblique model to evaluate the adequacy of the hypothesized factor structure. Maximum likelihood estimation was employed. A variety of goodness-of-fit indices indicated that the estimated model fit the observed data,  $\chi^2(12, N = 280) = 27.43$ ,  $p \leq .01$ , with root mean square error of approximation (RMSEA) = .07, which was higher than the acceptable good fit cutoff of .06 (Hu & Bentler, 1999); comparative fit index (CFI) = .99; and goodness-of-fit index (GFI) = .97. The data indicated a reasonable fit to the hypothesized two-factor oblique model. Results of EFA and CFA factor loadings for the 7-item crisis information seeking scale are shown in Table 1.

### Crisis Information Sharing Behavior

**Item reduction.** Survey Sample 1 ( $N = 279$ ) was used for item reduction and EFA. As an initial reduction method, item distributions were examined aiming at eliminating highly skewed and unbalanced distributions due to insufficient information, limited variability, and highly unstable correlational results (Clark & Watson, 1995). The results of frequency tables and kurtosis showed a normal distribution for all 21 items included in the scale.

Second, following the item-screening processes recommended by Matsunaga (2010) and the rule of thumb that factor correlation matrix values should be greater than .30 in large data sets (Field, 2013; Meyers et al., 2013), a PCA with promax rotation was used to generate a theoretical solution uncontaminated by unique and error variability. In addition,

**TABLE 1** *Structural Analysis of Crisis Information Seeking Scale*

Item	Factor loading EFA	CFA
<b>Factor 1: Social media platforms<sup>a</sup></b>		
Twitter	0.77	0.84
Instagram	0.95	0.97
Pinterest	0.89	0.89
Snapchat	0.90	0.91
<b>Factor 2: Interpersonal channels<sup>b</sup></b>		
Face-to-face and/or phone conversation	0.62	0.59
E-mailing people one knows	0.90	0.84
Texting people one knows	0.87	0.95

*Note.* All CFA loadings significant at  $p \leq .001$ . CFA = confirmatory factor analysis. EFA = exploratory factor analysis.

<sup>a</sup> $\alpha = .93$ ;  $M = 3.38$ ;  $SD = 2.01$ . <sup>b</sup> $\alpha = .84$ ;  $M = 4.10$ ;  $SD = 1.70$ .

the analysis only emphasized the variance that each observed variable shared with other observed variables (Tabachnick & Fidell, 2001). All items had higher scores that represented stronger agreement with information sharing action on a 7-point Likert scale. Prior to data analysis, the study used the KMO test of sampling adequacy and the Bartlett test of sphericity to determine the appropriateness of factor analysis (Kaiser & Rice, 1974). The KMO level of .94 and the significance of the Bartlett test (.00) indicated that the factor analysis was appropriate for the data (Kaiser & Rice, 1974). Moreover, in this initial step, all components that had eigenvalues greater than 1 were extracted. The analysis returned three components with initial eigenvalues greater than 1 (explaining 75.54% of the variance).

**Exploratory factor analysis.** After the initial analysis for item reduction for information sharing action, because correlations between factors were expected theoretically, and communality better estimates shared variance in a measurement (Costello & Osborne, 2005; Jin, Liu, Anagondahalli, & Austin, 2014; Meyers et al., 2013), an EFA was performed using principal axis factoring with promax rotation on the 21 items of information sharing action. Items having factor loadings of

less than .40 or cross-loading of the two components were considered poor and were eliminated (Tabachnick & Fidell, 2001). In addition, any items with a communality value less than .50 were dropped from the final solution (Meyers et al., 2013). As a result, four items (tell people one knows via face-to-face and/or phone conversations, post information about Zika on my friends' Facebook profiles or groups, post comments in others' blogs, and post comments in others' online videos about Zika) were deleted. Follow-up factor analyses on the remaining items suggested a 17-item scale with three underlying factors representing clusters of information sharing action for the Zika virus health crisis from social media platforms and interpersonal channels: Factor 1 is information sharing via non-Facebook social media platforms, including re-tweeting a CDC tweet, tweeting about Zika, writing blog posts, uploading pictures to Instagram, uploading pictures to Pinterest, liking CDC Instagram posts, sharing CDC Instagram posts on one's own Instagram profile, commenting on the CDC's Instagram page, liking CDC Pinterest posts, repinning a CDC Pinterest post on one's own Pinterest profile, and commenting on the CDC's Pinterest profile. Factor 2 is information sharing through interpersonal channels, including: e-mail people one knows, call people one knows, and text people one knows. Factor 3 is information sharing via CDC Facebook, including liking CDC Facebook posts, sharing CDC posts on one's own Facebook page, and commenting on the CDC Facebook page.

The resulting subscales demonstrated internal consistency,  $\alpha = .97$  ( $M = 3.67$ ,  $SD = 1.98$ ; 11 items for information sharing via non-Facebook social media platforms),  $\alpha = .86$  ( $M = 4.11$ ,  $SD = 1.76$ ; 3 items for information sharing through interpersonal channels), and  $\alpha = .89$  ( $M = 4.68$ ,  $SD = 1.75$ ; 3 items for information sharing via CDC Facebook). The results matched Clark and Watson's (1995) recommendations for a coefficient alpha benchmark of .80. The results indicate that the 17-item instrument measuring information sharing behavior for the public health crisis through various platforms and communication channels satisfied internal consistency within each factor and that the subscales for each cluster of media platforms were reasonable and parsimonious.

**Confirmatory factor analysis.** Survey Sample 2 ( $N = 280$ ) was used for CFA. To identify the factor structure by conducting CFA, AMOS

**TABLE 2** *Structural Analysis of Crisis Information Sharing Scale*

Items	Factor loadings EFA	CFA
<b>Factor 1: Non-Facebook social media platforms<sup>a</sup></b>		
Re-tweet a CDC tweet	0.77	0.77
Tweet about Zika	0.82	0.79
Write blog posts	0.73	0.75
Upload pictures to Instagram	0.88	0.81
Upload pictures to Pinterest	0.87	0.81
Like CDC Instagram post	0.83	0.83
Share CDC Instagram post on one's own Instagram profile	0.87	0.86
Comment on CDC Instagram page	0.93	0.86
Like CDC Pinterest post	0.90	0.90
Repin a CDC Pinterest post on one's own Pinterest profile	0.90	0.91
Comment on CDC Pinterest profile	0.90	0.91
<b>Factor 2: Interpersonal channels<sup>b</sup></b>		
E-mail people one knows	0.81	0.62
Call people one knows	0.76	0.69
Text people one knows	0.87	0.69
<b>Factor 3: CDC Facebook<sup>c</sup></b>		
Like CDC Facebook post	0.87	0.81
Share CDC post on my Facebook page	0.89	0.79
Comment on CDC Facebook page	0.77	0.81

*Note.* All CFA loadings significant at  $p \leq .001$ . CFA = confirmatory factor analysis. EFA = exploratory factor analysis.

<sup>a</sup> $\alpha = .97$ ;  $M = 3.67$ ;  $SD = 1.98$ . <sup>b</sup> $\alpha = .86$ ;  $M = 4.11$ ;  $SD = 1.76$ . <sup>c</sup> $\alpha = .89$ ;  $M = 4.68$ ;  $SD = 1.75$ .

23 was used for these factors with a 17-item oblique model to evaluate the adequacy of the hypothesized factor structure. Maximum likelihood estimation was employed. A variety of goodness-of-fit indices indicated if an estimated model fit the observed data,  $\chi^2(106, N = 280) = 282.01, p \leq .001$  (RMSEA = .08, CFI = .96, and GFI = .89) lower than the acceptable good fit cutoff of .90. The data indicated a reasonable fit to the hypothesized three-factor oblique model. Results of EFA and CFA factor loadings for the 17-item crisis information sharing scale are shown in Table 2.

## Discussion

### The CISS Scales

Under the overarching umbrella of “communicative behavior” in SMCC (Liu et al., 2015; Liu, Fraustino et al. 2016), publics’ information seeking and sharing actions are two distinct types of behavior. This refined operationalization demands valid and reliable scales be developed to measure the two core behavior outcome variables identified by SMCC (Jin & Liu, 2010; Liu et al., 2011, 2012). This study, focusing on public health crisis situations, developed and tested the CISS scales.

**Crisis information seeking scale.** The crisis information seeking scale of the CISS includes two clusters/subscales: (a) a 4-item subscale for information seeking via social media platforms—Twitter, Instagram, Pinterest, and Snapchat—and (b) a 3-item subscale for information seeking through interpersonal channels, including face-to-face and/or phone conversation, e-mailing people one knows, and texting people one knows.

**Crisis information sharing scale.** The crisis information sharing scale of the CISS includes three clusters/subscales: (a) an 11-item subscale for information sharing via non-Facebook social media platforms, including re-tweeting a CDC tweet, tweeting about Zika, writing blog posts, uploading pictures to Instagram, uploading pictures to Pinterest, liking CDC Instagram posts, sharing CDC Instagram posts on one’s own Instagram profile; commenting on the CDC Instagram page, liking a CDC Pinterest post, repinning a CDC Pinterest post on one’s own Pinterest profile, and commenting on the CDC Pinterest profile;

(b) a 3-item subscale for information sharing through interpersonal channels, including e-mailing people I know, calling people I know, and texting people I know; and (c) a 3-item subscale for information sharing via CDC Facebook, including liking a CDC Facebook post, sharing a CDC post on one's own Facebook page, and commenting on the CDC Facebook page. It is particularly interesting to see that the CDC Facebook page is rendered as one critical space where people go for health crisis information sharing. In public health crisis situations, health organizations' official Facebook pages seem to present a unique communication opportunity. As a federal health agency in the United States, the CDC has established its Facebook page as an influential health information authority on social media that directly disseminates crisis information to its Facebook group followers, who then spread such information to their friends and followers via liking, sharing, and commenting functions.

The CISS scales reported here are a tool that can be utilized by crisis researchers and managers in capturing the multiple facets of publics' communicative behavior during a public health crisis. The CISS scales can be useful for health organizations to capture publics' crisis information seeking and sharing actions via various channels and media platforms. They can also help health organizations evaluate publics' crisis information engagement level. The CISS scales thus contribute to crisis communication measurement by adding comprehensive clusters of health crisis-triggered communicative behavior.

### **Implications for Crisis Communication Research and Practice**

The CISS scales and our empirical findings echo previous crisis studies that social media channels are important for crisis information seeking (Kuttschreuter et al., 2014; Spence et al., 2016) and further provide a comprehensive understanding of how publics perceive the function of each social media platform for CISS in public health crises. In examining the CISS scales and subscales, a few notable patterns provide implications for both crisis researcher and practitioners.

First, despite its popularity, Facebook is not the go-to social media platform for publics to *seek* public health crisis information. Publics



tend to go to other social media platforms, such as Twitter, Instagram, Pinterest, and Snapchat, to find out more about what is going on and what to do about a health crisis. Although the survey participants in our study reported the CDC Facebook page as one of the most important places for them to *share* crisis information about Zika via liking a CDC post, sharing a CDC post, and commenting on the CDC Facebook page, it is unclear whether this is associated with the organization itself (i.e., CDC) or typical Facebook engagement behavior due to platform popularity. Nevertheless, this seems to indicate a unique opportunity, to be further explored and examined, for government agencies to utilize Facebook as an information sharing forum where publics, especially influential social media followers, can help spread timely and accurate information to their connected friends on social media (Jin & Liu, 2010; Liu et al., 2012).

Second, when it comes to CISS, other social media platforms (e.g., Twitter, Instagram, and Pinterest) function as tools to *seek* and *share* health crisis information for publics. Government health agencies, compared to corporations and nonprofit organizations, tend to adapt new social media platforms at a slower rate. Our findings suggest that government health agencies need to consider expanding their social media toolboxes, visual social media platforms in particular (e.g., Instagram and Pinterest), and tailoring social media strategies and tactics, which will contribute to more effective crisis preparedness, response, and recovery.

Third, interpersonal channels, such as texting and e-mailing, are important for both *seeking* and *sharing* public health crisis information, which corresponds to previous findings that individuals have a high tendency to share crisis information predominately via interpersonal channels rather than through online organizational and personal channels (Liu, Fraustino et al., 2016). The findings further provide evidence that texting and e-mailing are the two preferred information seeking and sharing communicative behaviors when publics use interpersonal communication to learn and spread information about a health crisis.

Fourth, the factor analyses yielded two surprising findings. The first was the weak loadings on a few items related to offline interpersonal channels (i.e., face-to-face conversation, phone call, text, and emails) in

CISS scales. Publics seem to prefer texting others, talking with someone face-to-face, calling someone on the phone, or e-mailing someone to learn about or share health crisis information. Our findings suggest a need and opportunity for health organizations to tailor health crisis information dissemination according to publics' offline interpersonal communication channel preferences. Although mobile technology allows one to call, e-mail, and text others, its texting function needs to be tapped more in times of health crisis. Health organizations need to have mobile-friendly crisis information ready to be sought out and shared further by mobile phone users. The second surprise was that none of the three factors for crisis information sharing includes Facebook in general, although there are some activities not tied to the CDC's social platforms (i.e., Factor 3 is specific to the CDC Facebook page). The mixture of information sharing activities tied to sharing CDC-sourced information and those regarding general (nonsourced) posts/comments, as rendered and confirmed statistically, is intriguing. It suggests that when it comes to where and how publics share health crisis information, the boundary between sourced and nonsourced is more blurred than expected, which merits further investigation.

### **Limitations and Future Directions**

As the first study developing multiple-item scales for measuring publics' communicative behavior in SMCC, this study examined the conceptualization and operationalization of publics' crisis information seeking and their crisis information sharing. Findings reveal distinctive clusters representing different information seeking and sharing actions by publics. However, the focus on public health crises may limit the generalizability of the conclusions and the CISS scales' applicability to a broader range of crisis situations, such as organizational crises and other types of public emergency crises.

First, the external validity of the study is limited because Zika was still in early stages when the survey data collection took place. Thus participants were asked to speculate on further Zika information sharing. In addition, there might be social desirability issues, as the participants may view any information coming from the CDC as legitimate in general and regard the CDC as a primary source of information during a

health crisis. Therefore the results may not reflect the full picture of reality when participants choose information sources during health crises.

Second, the predictability of the CISS scales is yet to be tested, which will provide further information on whether the two types of crisis information seeking behavior and three types of crisis information sharing behavior will contribute to effectively predicting publics' communicative responses to crisis type, information source and information form, and so on.

Third, this study did not measure attitude toward the source of the crisis information, which might impact publics' health CISS activities. Future studies should further examine how individuals' attitudes toward information might influence their health crisis communicative behavior across social media platforms.

In sum, this study is a significant step toward developing a valid and reliable measure of publics' communicative responses in SMCC evoked by a severe public health threat. How health organizations and news media understand, facilitate, and effectively respond to publics' CISS actions will provide important insights for health organizations to build community resilience, gain publics' support, and capitalize on the opportunity to engage influential social media followers on social media platforms to jointly spread timely and accurate health crisis information to individuals and communities in need.

## **Appendix A: Crisis Information Seeking Survey Instructions and Items**

**Instruction:** Please indicate how much you agree with each of the following information seeking actions, after reading the post about Zika, by clicking the number that best indicates the extent of your agreement/disagreement. If the question is not applicable to you, select “N/A.”

The 12 initial information seeking behavior items include the following: (a) “I would look for more information from traditional news media (e.g., newspaper, TV news, etc.)”; (b) “I would look for more information from online videos (e.g., YouTube videos)”; (c) “I would look for more information from Facebook page updates”; (d) “I would look for more information from Twitter”; (e) “I would look for more information from others’ blogs”; (f) “I would look for more information on Instagram”; (g) “I would look for more information on Pinterest”; (h) “I would look for more information from Snapchat”; (i) “I would look for more information by talking to people I know via face-to-face and/or phone conversations”; (j) “I would look for more information by e-mailing people I know”; (k) “I would look for more information by texting people I know”; and (l) “I would look for more information from my primary health care provider.”

## **Appendix B: Crisis Information Seeking Survey Instructions and Items**

**Instruction:** Please indicate how much you agree/disagree with each of the following actions, after reading the post about Zika, by clicking the number that best indicates the extent of your agreement. If the question is not applicable to you, select “N/A.”

The 21 initial information sharing behavior items include the following: (a) “I would tell people I know (e.g., family, friends and co-workers, etc.) via face-to-face and/or phone conversations about [health crisis]”; (b) “I would tell people I know (e.g., family, friends and co-workers, etc.) by e-mailing them about [health crisis]”; (c) “I would call people I know (e.g., family, friends and co-workers, etc.) to talk about [health crisis]”; (d) “I would text people I know (e.g., family, friends and

co-workers, etc.) about [health crisis]”; (e) “I would ‘like’ a CDC [Centers for Disease Control and Prevention] Facebook post about [health crisis]”; (f) “I would ‘share’ a CDC Facebook post about [health crisis] on my Facebook page”; (g) “I would comment about [health crisis] on CDC Facebook page”; (h) “I would post information about [health crisis] on my friends’ Facebook profiles or groups”; (i) “I would re-tweet a CDC tweet”; (j) “I would tweet about [health crisis]”; (k) “I would write blog posts about [health crisis] on my own blog”; (l) “I would post comments about [health crisis] on others’ blogs”; (m) “I would make comments in the comment section of others’ online videos about [health crisis]”; (n) “I would upload pictures related to [health crisis] to Instagram”; (o) “I would upload pictures related to [health crisis] to Pinterest”; (p) “I would ‘like’ a CDC Instagram post about [health crisis]”; (q) “I would ‘share’ a CDC Instagram post about [health crisis] on my Instagram profile”; (r) “I would comment about [health crisis] on CDC’s Instagram page”; (s) “I would ‘like’ a CDC Pinterest post about [health crisis]”; (t) “I would repin a CDC Pinterest post about [health crisis] on my Pinterest profile”; and (u) “I would comment about [health crisis] on CDC’s Pinterest profile.”

## **Acknowledgment**

The authors thank the Department of Advertising and Public Relations in the Grady College of Journalism and Mass Communication at the University of Georgia for the funding support for this research project.

**Yen-I Lee** is a PhD candidate in the Grady College of Journalism and Mass Communication at the University of Georgia. Her research focuses on strategic communication and health communication. Specifically, her research examines how health message campaigns and human–technology interaction use shape publics’ discrete emotional, cognitive, and behavioral changes in the context of health risks and crisis communication.

**Yan Jin**, PhD, is a professor and assistant department head of advertising and public relations, as well as associate director of the Center for Health and Risk Communication, at the Grady College of Journalism and Mass Communication, University of Georgia. Her primary research programs are in the areas of crisis communication and strategic health risk communication, focusing on the role of emotions and social media in crisis communication theory and application.

## **ORCID**

Yen-I Lee  <https://orcid.org/0000-0001-7820-6568>

## References

- Austin, L., Liu, B. F., & Jin, Y. (2012). How audiences seek out crisis information: Exploring the social-mediated crisis communication model. *Journal of Applied Communication Research*, 40, 188–207. <https://doi.org/10.1080/00909882.2012.654498>
- Avery, E. (2010). Contextual and audience moderators of channel selection and message reception of public health information in routine and crisis situations. *Journal of Public Relations Research*, 22, 378–403. <https://doi.org/10.1080/10627261003801404>
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7, 309–319. <https://doi.org/10.1037/1040-3590.7.3.309>
- Clarke, P., & Kline, F. G. (1974). Media effects reconsidered: Some new strategies for communication research. *Communication Research*, 1, 224–240. <https://doi.org/10.1177/009365027400100205>
- Costello, A. B., & Osborne, J. W. (2005). Best practices in exploratory factor analysis: Four recommendations for getting the most from your analysis. *Practical Assessment, Research & Evaluation*, 10, 1–9.
- Dredze, M., Broniatowski, D. A., & Hilyard, K. M. (2016). Zika vaccine misconceptions: A social media analysis. *Vaccine*, 34, 3441–3442. <https://doi.org/10.1016/j.vaccine.2016.05.008>
- Field, A. (2013). *Discovering statistics using IBM SPSS statistics* (4th ed.). Los Angeles, CA: Sage.
- Freberg, K., Saling, K., Vidoloff, K. G., & Eosco, G. (2013). Using value modeling to evaluate social media messages: The case of hurricane Irene. *Public Relations Review*, 39, 185–192. <https://doi.org/10.1016/j.pubrev.2013.02.010>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, 6, 1–55. <https://doi.org/10.1080/10705519909540118>
- Jin, Y., Fraustino, J. D., & Liu, B. F. (2016). The scared, the outraged, and the anxious: How crisis emotions, involvement, and demographics predict publics' conative coping. *International Journal of Strategic Communication*, 10, 289–308. <https://doi.org/10.1080/1553118x.2016.1160401>
- Jin, Y., Liu, B. F., & Austin, L. (2014). Examining the role of social media in

- effective crisis management: The effects of crisis origin, information form, and source on publics' crisis responses. *Communication Research*, 41, 74–94. <https://doi.org/10.1177/0093650211423918>
- Jin, Y., Liu, B. F., Anagondahalli, D., & Austin, L. (2014). Scale development for measuring publics' emotions in organizational crises. *Public Relations Review*, 40, 509–518. <https://doi.org/10.1016/j.pubrev.2014.04.007>
- Jin, Y., & Liu, B. F. (2010). The blog-mediated crisis communication model: Recommendations for responding to influential external blogs. *Journal of Public Relations Research*, 22, 429–455. <https://doi.org/10.1080/10627261003801420>
- Kaiser, H. F., & Rice, J. (1974). Litter jiffy, Mark IV. *Educational and Psychology Measurement*, 34, 111–117. <https://doi.org/10.1177/001316447403400115>
- Kuttuschreuter, M., Rutsaert, P., Hilverda, F., Regan, Á., Barnett, J., & Verbeke, W. (2014). Seeking information about food-related risks: The contribution of social media. *Food Quality and Preference*, 37, 10–18. <https://doi.org/10.1016/j.foodqual.2014.04.006>
- Lachlan, K. A., Spence, P. R., & Seeger, M. (2009). Terrorist attacks and uncertainty reduction: Media use after September 11th. *Behavioral Sciences of Terrorism and Political Aggression*, 1, 101–110. <https://doi.org/10.1080/19434470902771683>
- Lariscy, R. W., Avery, E. J., Sweetser, K. D., & Howes, P. (2009). An examination of the role of online social media in journalists' source mix. *Public Relations Review*, 35, 314–316. <https://doi.org/10.1016/j.pubrev.2009.05.008>
- Liu, B. F., Austin, L., & Jin, Y. (2011). How publics respond to crisis communication strategies: The interplay of information form and source. *Public Relations Review*, 37, 345–353. <https://doi.org/10.1016/j.pubrev.2011.08.004>
- Liu, B. F., Bartz, L., & Duke, N. (2016). Communicating crisis uncertainty: A review of the knowledge gaps. *Public Relations Review*, 42, 479–487. <https://doi.org/10.1016/j.pubrev.2016.03.003>
- Liu, B. F., Fraustino, J. D., & Jin, Y. (2015). How disaster information form, source, type, and prior disaster exposure affect public outcomes: Jumping on the social media bandwagon? *Journal of Applied Communication Research*, 43, 44–65. <https://doi.org/10.1080/00909882.2014.982685>
- Liu, B. F., Fraustino, J. D., & Jin, Y. (2016). Social media use during disasters: How information form and source influence intended behavioral



- responses. *Communication Research*, 43, 626–646. <https://doi.org/10.1177/0093650214565917>
- Liu, B. F., Jin, Y., & Austin, L. A. (2013). The tendency to tell: Understanding publics' communicative responses to crisis information form and source. *Journal of Public Relations Research*, 25, 51–67. <https://doi.org/10.1080/1062726X.2013.739101>
- Liu, B. F., Jin, Y., Briones, R., & Kuch, B. (2012). Managing turbulence online: Evaluating the blog-mediated crisis communication model with the American Red Cross. *Journal of Public Relations Research*, 24, 353–370. <https://doi.org/10.1080/1062726X.2012.689901>
- Mangold, W. G., & Faulds, D. J. (2009). Social media: The new hybrid element of the promotion mix. *Business Horizons*, 52, 357–365. <https://doi.org/10.1016/j.bushor.2009.03.002>
- Matsunaga, M. (2010). How to factor-analyze your data right: Do's, don't's, and how-to's. *International Journal of Psychological Research*, 3, 97–110. <https://doi.org/10.21500/20112084.854>
- Meyers, L. S., Gamst, G., & Guarino, A. J. (2013). *Applied multivariate research* (2nd ed.). Los Angeles, CA: Sage.
- Moon, B. B., Rhee, Y., & Yang, S. U. (2016). Developing public's information transmitting behavior (ITB) model in public relations: A cross-national study. *Journal of Public Relations Research*, 28, 4–18. <https://doi.org/10.1080/1062726X.2015.1107482>
- Morens, D. M., & Fauci, A. S. (2013). Emerging infectious diseases: Threats to human health and global stability. *PLoS Pathogens*, 9(7), e1003467. <https://doi.org/10.1371/journal.ppat.1003467>
- Palenchar, M. J., & Freberg, K. (2012). Emergency management planning: Risk, crises, issues, and social media. In B. A. Olanrian, D. E. Williams, & W. T. Coombs (Eds.), *Pre-crisis planning, communication, and management* (pp. 147–169). New York, NY: Peter Lang.
- Reynolds, B. (2016). *Zika crisis and emergency risk communication (CERC) discussion: Survey of topics: What the public needs when risks are uncertain*. Retrieved from <https://stacks.cdc.gov/view/cdc/40820>
- Reynolds, B., Galdo, J., & Sokler, L. (2002). *Crisis and emergency risk communication*. Atlanta, GA: Centers for Disease Control and Prevention.
- Schultz, F., & Raupp, J. (2010). The social construction of crises in governmental and corporate communications: An inter-organizational and inter-systemic

- analysis. *Public Relations Review*, 36, 112–119. <https://doi.org/10.1016/j.pubrev.2009.11.002>
- Schultz, F., Utz, S., & Göritz, A. (2011). Is the medium the message? Perceptions of and reactions to crisis communication via Twitter, blogs and traditional media. *Public Relations Review*, 37, 20–27. <https://doi.org/10.1016/j.pubrev.2010.12.001>
- Seeger, M. W. (2006). Best practices in crisis communication: An expert panel process. *Journal of Applied Communication*, 34, 232–244. <https://doi.org/10.1080/00909880600769944>
- Shklovski, I., Burke, M., Kiesler, S., & Kraut, R. (2010). Technology adoption and use in the aftermath of Hurricane Katrina in New Orleans. *American Behavioral Scientist*, 53, 1228–1246. <https://doi.org/10.1177/0002764209356252>
- Smith, B. G., & Gallicano, T. D. (2015). Terms of engagement: Analyzing public engagement with organizations through social media. *Computers in Human Behavior*, 53, 82–90. <https://doi.org/10.1016/j.chb.2015.05.060>
- Spence, P. R., Lachlan, K. A., Edwards, A., & Edwards, C. (2016). Tweeting fast matters, but only if I think about it: Information updates on social media. *Communication Quarterly*, 64, 55–71. <https://doi.org/10.1080/01463373.2015.1100644>
- Sutton, J. N. (2010). Twittering Tennessee: Distributed networks and collaboration following a technological disaster. In S. French, B. Tomaszewski, & C. Zobel (Eds.), *ISCRAM 2010 Conference Proceedings: The 7th International Conference on Information Systems for Crisis Response and Management* (pp. 1–10). Seattle, WA: ISCRAM.
- Tabachnick, B. G., & Fidell, L. S. (2001). *Using multivariate statistics* (4th ed.). Needham Heights, MA: Allyn and Bacon.
- Tardy, R. W., & Hale, C. L. (1998). Getting “plugged in”: A network analysis of health-information seeking among “stay-at-home moms.” *Communication Monographs*, 65, 336–357. <https://doi.org/10.1080/03637759809376457>
- Thelwall, M., & Stuart, D. (2007). RUOK? Blogging communication technologies during crises. *Journal of Computer-Mediated Communication*, 12, 523–548. <https://doi.org/10.1111/j.1083-6101.2007.00336.x>
- Utz, S., Schultz, F., & Glocka, S. (2013). Crisis communication online: How medium, crisis type and emotions affected public reactions in the

- Fukushima Daiichi nuclear disaster. *Public Relations Review*, 39, 40–46. <https://doi.org/10.1016/j.pubrev.2012.09.010>
- Van der Meer, T. G. L. A. (2016). Automated content analysis and crisis communication research. *Public Relations Review*, 42, 952–961. <https://doi.org/10.1016/j.pubrev.2016.09.001>
- Vijaykumar, S., Jin, Y., & Nowak, G. (2015). Social media and the virality of risk: The risk amplification through media spread (RAMS) model. *Journal of Homeland Security and Emergency Management*, 12, 653–677. <https://doi.org/10.1515/jhsem-2014-0072>
- Wang, W., & Ahern, L. (2015). Acting on surprise: Emotional response, multiple-channel information seeking and vaccination in the H1N1 flu epidemic. *Social Influence*, 10, 137–148. <https://doi.org/10.1080/15534510.2015.1011227>
- Witte, K. (1995). Generating effective risk messages: How scary should your risk communication be? *Communication Yearbook*, 18, 229–254.



# A Measure of Perceived Severity in Organizational Crises: A Multidimensional Scale Development and Validation

Ziyuan Zhou , Eyun-Jung Ki, and Kenon A. Brown

Department of Advertising and Public Relations, University of Alabama,  
Tuscaloosa, Alabama, USA

## ABSTRACT

This study proposed a definition of perceived crisis severity and created a valid and reliable scale to measure the construct following Churchill's scale development procedure. The proposed scale, after rigorous pilot testing and exploratory and confirmatory factor analysis, contains 3 factors with 12 items. This study discusses potential applications of the developed measures and provides future research directions.

**KEYWORDS:** Perceived crisis severity; scale development; SCCT

Situational crisis communication theory (SCCT) is the most frequently tested theory in crisis communication research along with image repair theory (Avery, Lariscy, Kim, & Hocke, 2010). SCCT is the first theory to integrate crisis situations with response strategies, arguing that the selection of a crisis response strategy is contingent on different factors. It helps practitioners form a complete picture of a crisis dynamic rather than only thinking about what to say. Since its introduction, scholars have tested intensifiers proposed by the theory, like prior reputation and crisis history (e.g., Coombs, 2004; Kiambi & Shafer, 2016). As more evidence is gained through empirical research, one variable initially proposed by SCCT draws the least attention and only reaches inconsistent findings: crisis severity.

In the seminal empirical study, Coombs (1998) identified two intensifiers that strengthen stakeholders' responsibility attribution: crisis

**CONTACT** Ziyuan Zhou • E-mail: [zzhou36@crimson.ua.edu](mailto:zzhou36@crimson.ua.edu) • Department of Advertising and Public Relations, University of Alabama, Tuscaloosa, AL 35487, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

history and the severity of damage. Severity of damage was negatively correlated with crisis responsibility in the original experiment (Coombs, 1998) and so was excluded in later SCCT studies (Coombs, 2007, 2010). Nonetheless, the concept of crisis severity continuously appears in crisis communication and management literature (Arpan & Pompper, 2003; Arpan & Roskos-Ewoldsen, 2005; Claeys, Cauberghe, & Vyncke, 2010; Hong & Len-Riós, 2015; Isaacson, 2012; Laufer, Gillespie, McBride, & Gonzalez, 2005; Lee, 2004; Vassilikopoulou, Siomkos, Chatzipanagiotou, & Pantouvakis, 2009). Scholars believe the intensity that stakeholders feel varies as the perceptions of crisis severity change. The negative outcomes of a crisis are influenced by the crisis severity, especially organizational reputation, such that as a crisis becomes more severe, organizational reputation suffers more (Claeys et al., 2010; Isaacson, 2012).

In addition to the theoretical implications for understanding crisis dynamics, crisis severity can also influence crisis managers' decisions. Stephens, Malone, and Bailey (2005) recommended considering the severity of a crisis when selecting one's response strategy. Crisis managers need to evaluate a crisis situation, especially its severity and scope, before developing appropriate response strategies. Crisis response strategies cannot be maximally effective if crisis managers underestimate or overestimate the magnitude of a crisis.

Despite the importance of crisis severity, there is no widely accepted definition. Studies that use the term *crisis severity* often refer to different meanings. This discrepancy limits researchers' understanding and analysis of this essential construct. More importantly, a lack of definition hinders the creation of a reliable and valid measurement. Current scales generally treat severity as a one-dimensional variable and ask only one question (Claeys et al., 2010; Laufer et al., 2005; Vassilikopoulou et al., 2009) or three similar questions (Arpan & Pompper, 2003; Arpan & Roskos-Ewoldsen, 2005; Hong & Len-Riós, 2015). This oversimplifies the complexity of the construct. Without a valid measurement, findings from any research are questionable. Hence this study intends to develop a valid and reliable measurement of crisis severity to advance the field of crisis communication.

The purpose of this study is twofold. First, we propose a definition

of perceived crisis severity by stakeholders and its dimensions using a comprehensive literature review. Second, based on the constructed definition, we develop a measure of perceived crisis severity and validate the scale by following Churchill's (1979) guidelines. Churchill proposed an eight-step scale validation process: specify the domain of construct, generate a sample of items, collect data, purify the measure, collect data, assess reliability, assess validity, and develop norms.

## **Defining the Construct and Searching for Measurements**

### **Perceived Crisis Severity Defined**

SCCT assumes that an organization's reputation is a valued resource that can be threatened by crises. During a crisis, an organization's goal is to evaluate the situation and select appropriate response strategies to protect its reputation (Coombs & Holladay, 2002). Early SCCT studies discussed severity of damage (crisis severity) along with crisis responsibility and crisis history (Coombs, 1995, 1998; Coombs & Holladay, 1996, 2002). Coombs (1995) argued that damage could be any form of death, injury, property destruction, or environmental harm (Coombs, 1995). Crisis severity was operationalized as "the amount of damage generated by a crisis including financial, human, and environmental damage" (Coombs & Holladay, 2002, p. 169).

At the first empirical attempt, Coombs (1998) predicted that as the severity of crisis damage increases, an organization's image becomes more negative, and the organization's perceived crisis responsibility is strengthened. However, Coombs found the reverse of this hypothesis—minor degrees of severity incurred greater crisis responsibility attribution and more negative image evaluation. Coombs claimed that stakeholders' sympathy toward the organization caused the reverse finding. Lee (2004) similarly proposed that higher crisis severity leads to more crisis responsibility, more negative impressions, less sympathy, and less trust. Likewise, none of these hypotheses were significant. Park and Len-Riós (2010) followed this line of research and added some explanations. They hypothesized that people attribute more crisis responsibility to an organization when a consumer is the injured party. In contrast, if the injured party is the organization, people attribute

less crisis responsibility. However, empirical evidence did not support their prediction. No interaction was found between crisis severity and injured party (Park & Len-Riós, 2010).

While the aforementioned studies failed to find the hypothesized effects of crisis severity, other studies revealed that crisis severity is positively associated with stakeholders' blame and negatively associated with reputation and purchase intent (Arpan & Roskos-Ewoldsen, 2005; Claeys et al., 2010; Isaacson, 2012; Laufer et al., 2005). Some researchers investigated crisis severity from a different angle, assuming it is important to minimize people's perceptions of crisis severity. These studies treated crisis severity as a dependent variable. Arpan and Pompper (2003) indicated that the "stealing thunder" strategy, which refers to "an admission of a weakness before that weakness is announced by another party" (p. 294), could effectively reduce crisis severity levels. Hong and Len-Riós (2015) also demonstrated that university sports crises cause higher perceptions of crisis severity than product-recall crises.

Although scholars extensively use the term *crisis severity*, definitions vary. As discussed previously, Coombs and Holladay (2002) defined crisis severity as "the amount of damage generated by a crisis including financial, human, and environmental damage" (p. 169). This definition indicates that crisis severity refers to the actual damage a crisis incurs. However, other scholars have examined crisis severity from stakeholders' points of view. Park and Len-Riós (2010) argued that "the severity of damage is not necessarily a function of actual damage, but of perceptions" (p. 595). They claimed that the perception of crisis severity can vary according to media portrayals and definitions. Claeys et al. (2010) also suggested that researchers use perceived crisis severity instead of the actual damage. The definition of a crisis as "the perception of an unpredictable event that threatens important expectancies of stakeholders and can seriously impact an organization's performance and generate negative outcomes" (Coombs, 2007, pp. 2–3) implies that the existence of a crisis is determined by stakeholders' perceptions. Even if an organization does not believe there is a crisis, the crisis exists as long as stakeholders believe it exists. The same logic should apply to the definition of crisis severity. Even if an organization does not believe a crisis is severe, the crisis is severe as long as stakeholders believe it is.

As such, it is more significant to investigate perceived crisis severity rather than actual severity.

Although crisis severity is frequently discussed, no unified definition of the concept exists. This study defines perceived crisis severity as “stakeholders’ objective and emotional assessment of the intensity of a crisis.” This definition contains three key elements. First, this study considers crisis severity from stakeholders’ perspectives. A crisis is severe as long as stakeholders perceive it to be severe. Second, the perceived severity of a crisis can vary among different stakeholder groups. For example, a crisis situation might be severe to a community but not to investors. Third, the assessment of severity is based on both *cold* and *hot judgments*. Cold judgment refers to objective assessments, such as who is affected by the crisis or, whether the crisis impacts my own life. Stakeholders use logic and knowledge to infer the severity of a crisis. Hot judgment refers to the uneasiness a crisis brings people. People are emotional, and so the initial psychological impact of a crisis on people largely influences people’s judgments. As Coombs and Holladay (2005) have discussed, a crisis usually generates negative emotions among stakeholders. Evaluations of crisis severity are less likely to be based solely on critical thinking; instead, cognition and emotion together influence stakeholders’ judgments.

### **Current Measures of Crisis Severity**

Scholars in crisis communication commonly use survey and experimental methods to examine perceived crisis severity. Experimental studies manipulate crisis situations to control severity. Coombs’s (1998) seminal work labeled little property damage and nonserious injuries as minor damage and huge property damage and serious injuries as major damage. Lee (2004) regarded 200 injuries as a severe crisis and 300 deaths as an extremely severe crisis resulting from a plane crash. Isaacson (2012) regarded the theft of \$15,000 a high-severity crisis and the theft of a small amount of money a low-severity crisis. Although these experimental studies explained the effect of perceived crisis severity, their contribution to crisis severity measurement is limited. As crisis types diversify, some crises do not cause death, injury, or property damage but could still be categorized as mild or severe in terms of crisis



severity. For example, data breach crises almost always influence large numbers of people and cause concerns about the security of their identities and financial information, though no death or injury is involved.

In survey research, scholars have used single-item scales to measure crisis severity, for example, asking how severe respondents consider the crisis situation to be based on either a 10-point scale or an 11-point scale (Claeys et al., 2010; Laufer et al., 2005; Vassilikopoulou et al., 2009). Other scholars have used multiple-item scales, for example, asking about participants' feelings of seriousness, badness, and extremeness regarding a crisis (Arpan & Pompper, 2003; Arpan & Roskos-Ewoldsen, 2005; Hong & Len-Riós, 2015).

These crisis severity scales have two major drawbacks. First, nearly all studies treat crisis severity as a one-dimensional construct. Some ask only one question (Claeys et al., 2010; Laufer et al., 2005; Vassilikopoulou et al., 2009). Even scales with multiple items do not demonstrate different dimensions in crisis severity (Arpan & Pompper, 2003; Arpan & Roskos-Ewoldsen, 2005; Hong & Len-Riós, 2015). Second, none of the studies have considered the perspectives of publics. The scales do not answer to whom a crisis is severe. Stakeholders who are more affected by the crisis are likely to have different crisis severity perceptions than those who are less affected by the crisis. In short, perceived crisis severity differs among stakeholders.

### **Proposed Dimensions and Items**

Perceived crisis severity is not regarded as a multidimensional construct and does not have a widely accepted measurement. To develop a multidimensional measure of perceived crisis severity, the researchers consulted with literature from related disciplines, including psychology and marketing.

#### **Psychological Origin: Defensive Attribution**

The concept of defensive attribution initially appeared in psychology literature as early as the 1960s. Walster (1966) argued that the worse the consequences of an accident, the greater responsibility people would attribute to the wrongdoer. She explained that if a person only suffers

small losses, people commonly believe the unpleasant thing could happen to anyone even if he or she did nothing wrong. On the other hand, if an accident becomes more severe and unpleasant, people feel the unpleasant thing could happen not only to “anybody” but to “you.” In this situation, people seek someone who is responsible for the accident to assure themselves. Fiske and Taylor (1991) elaborated on the defensive attribution hypothesis in a similar fashion. An accident becomes less tolerable as its consequences become more severe. People are afraid similar things will happen to them; blaming the person who causes the accident makes it predictable and avoidable (Fiske & Taylor, 1991).

Since the introduction of defensive attribution, various studies have been conducted to test its hypotheses. Most studies have confirmed the positive relationship between outcome severity and responsibility attribution, though some research has found the relationship to be insignificant or even negative (Shaver, 1970; Thomas & Parpal, 1987; Walster, 1966). The results of two meta-analyses, however, generally confirm the defensive attribution hypothesis (Burger, 1981; Robbennolt, 2000).

As studies on defensive attribution accumulated, the concept was introduced to marketing communication. Laufer et al. (2005) claimed that findings of defensive attribution in psychology could also shed light on marketing communication research. The authors argued that the severity of product failure and product-harm crises vary. Minor problems and severe problems will create different blame attribution. However, blame attribution may also influence how people perceive the severity of a crisis. In other words, blame attribution could be both an antecedent and outcome of severity. The two concepts are intertwined and influence each other. Therefore this study regards stakeholders' blame as a tentative dimension of perceived crisis severity. Although blame cannot determine severity, the magnitude of stakeholders' blame attribution reflects their perceived crisis severity.

### **Service Failure Severity: A Service Marketing Perspective**

Service failure severity (also known as the magnitude of service failure) is a service marketing concept comparable to crisis severity. Service failure severity is defined as “a customer's perceived intensity of a service problem” (Weun, Beatty, & Jones, 2004, p. 135). Perceived loss

is closely interwoven with service failure severity. The more intense or severe a service problem, the greater the customer's perceived loss (Chuang, Cheng, Chang, & Yang, 2012; Weun et al., 2004). Riaz and Khan (2016) even defined service failure severity as "the measure of the enormity of the loss that a consumer faces as an outcome of service failure" (p. 426). In a similar vein, empirical studies confirmed that as service failure severity increases, customers' dissatisfaction (McCollough, 2009), disloyalty (Wang, Wu, Lin, & Wang, 2011), and negative word of mouth (Weun et al., 2004) increase correspondingly.

Service failure severity and crisis severity bear two similarities. First, service failure and crises are negative and unexpected events that occur to a person or an organization. They both bring financial and reputational losses. Second, the magnitude of both service failure severity and crisis severity is determined by people's perceptions. The difference between the two concepts lies in audiences. For a service failure, the audience is primarily customers. For a crisis, an organization should communicate with several stakeholder groups in addition to customers (e.g., shareholders, employees).

Regardless of differences between the two concepts, one could adopt ideas and dimensions from service failure severity measurement when developing a crisis severity scale. Two measurement scales are widely applied in service marketing. One scale contains three items (Inyang, 2015; Wang et al., 2011; Weun et al., 2004), and the other one includes four items (Riaz & Khan, 2016; Tsarenko & Tojib, 2012). These items measure two concepts: emotion and relevance. Items measuring "angry," "unpleasant," and "stress" represent human emotions. These items correspond to Lee's (2004) argument that high crisis severity may incur negative emotional reactions. Therefore, this study deems emotion an important dimension of crisis severity. Other items measure the level of inconvenience a service failure brings to participants, which is conceptually similar to relevance in crisis communication. Lee contended that the more severe the crisis, the more personal involvement/relevance it has. Laufer and colleagues (2005) argued that relatively minor problems involve mild inconvenience to stakeholders. Thus relevance is another important dimension of severity. These two dimensions from service failure severity scales will be referenced as *relevance-induced severity* and

*emotion-induced severity*. Finally, this study regards blame attribution from defensive attribution literature as a third dimension of perceived crisis severity that will be referenced as *blame-induced severity*.

Thus the initial construct contains three dimensions: blame-induced, relevance-induced, and emotion-induced severity. Since the three dimensions are similar to existing concepts in crisis communication, we consulted existing measures of these variables. Blame-induced severity items were adopted from the items of an organizational crisis responsibility scale (Brown & Ki, 2013). Emotion-induced severity items were drawn from service failure severity scales (Tsarenko & Tojib, 2012; Weun et al., 2004). Relevance-induced severity items were drawn from the personal involvement inventory (Zaichkowsky, 1994) and service failure severity scales (Tsarenko & Tojib, 2012; Weun et al., 2004). To enlarge the initial item pool, researchers referred to dictionary definitions of blame, emotion, and relevance and created several new items. Accordingly, the following research question is proposed:

**RQ1:** What is a reliable and valid measure of perceived crisis severity?

### **Pilot Testing**

Pilot tests were conducted prior to the main data collection. First, a group of doctoral students specializing in the communication discipline were asked to read five crisis scenarios designed to stimulate research subjects and evaluate initial scale items. This procedure improved the logic and readability of the crisis scenarios.

After the first pilot test, the researchers invited nine experts in crisis communication to evaluate the quality of the scale. The study employed Lawshe's (1975) quantitative approach, the content validity ratio (CVR), to determine the agreement among experts. The scholars read the definitions of the target construct and its three dimensions and then were asked to evaluate the proposed dimensions and items based on three categories: essential, useful but not essential, and not necessary. Based on these experts' evaluations, CVRs were computed, and only two items passed the recommended cutoff of .78 (Lawshe, 1975), while the other items were challenged by the scholars. In addition

to completing the CVR form, scholars were asked to comment on the adequacy of the three dimensions to measure the perceived crisis severity construct and the accuracy of the definitions. The blame-induced dimension reached the least agreement of the three dimensions. The expert scholars questioned the discriminant validity of this dimension, arguing that some crises are inherently severe but unnecessarily cause strong blame, such as natural disasters. These comments were applied to revise the items. After the two rounds of reviews by students and scholars separately, initial content validity was achieved.

### **Crisis Situation Manipulations**

All crises used in this study happened between 2014 and 2016 and are well known by publics in the United States. The five crisis situations included the Ashley Madison data breach, the University of Missouri racism protests, the Wells Fargo fraudulent account scandal, the Volkswagen emission scandal, and Malaysia Airlines Flight 370. Each crisis scenario was presented in a short paragraph ranging from 96 to 123 words. Only basic information was given, such as time, organization name, the cause of the crisis, and victims involved.

## **Full Administration**

### **Sample**

The study recruited 300 participants from Amazon Mechanical Turk, but after a comprehension check, only data from 290 participants were kept for further analysis. The sample primarily consisted of males (61%;  $n = 177$ ), while females made up 38.6% ( $n = 112$ ). The racial makeup of the sample was as follows: 76.6% Caucasian ( $n = 222$ ), 10.7% Asian and Pacific Islander ( $n = 31$ ), 6.9% African American ( $n = 20$ ), and 6.6% Latinx or Hispanic ( $n = 19$ ). Some subjects identified themselves as multiracial. The average age of the participants was 34.79 years, with a range between 20 and 70 years. This data set was used to conduct all statistical analyses, except confirmatory factor analysis. For confirmatory factor analysis, data were collected from 182 participants on Amazon Mechanical Turk. About half of the sample were male ( $n = 90$ ) and half were female ( $n = 92$ ). The racial makeup of the sample was as follows: 40.7% Asian ( $n = 74$ ), 38.5% Caucasian ( $n = 70$ ), 7.1%

Native American ( $n = 13$ ), 6% African American ( $n = 11$ ), and 5.5% Latinx or Hispanic ( $n = 10$ ). The average age of the participants was 29.18 years, with a range between 18 and 67 years.<sup>1</sup>

## **Procedures**

The study created five crisis scenarios, which covered different types of organizations and crises. Participants were randomly assigned to one of the five scenarios. After reading a crisis, participants were required to answer two comprehension check questions. One asked them to identify the type of the crisis, and the other was to identify the name of the organization. Participants who failed to give correct answers were excluded from further analysis to ensure data quality. Participants were then asked to rate their agreement on measurement items based on a 7-point Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

## **Measure Purification**

A correlation matrix was generated among all 24 items. The initial check indicated that all items in the blame-induced dimension were not correlated with other items,  $p > .05$ . This result raises convergent validity issues. Exploratory factor analysis (EFA) was implemented, and the result demonstrated that the factor containing all blame-induced severity items had low correlation with other factors (with relevance,  $r = .00$ ; with emotion,  $r = .06$ ). The test further confirmed the convergent validity problem. Based on panel suggestions and the EFA result, the study theoretically and statistically rejected the feasibility of the blame-induced severity dimension and removed the seven items. Therefore the statistical examination started from two dimensions with 17 items to develop the scale for perceived crisis severity.

## **Validity Assessment**

### **Exploratory Factor Analysis**

Before conducting EFA, the correlation matrix was first assessed to determine factorability of the matrix. Three examinations were applied: (a) Bartlett's test of sphericity, (b) the Kaiser–Meyer–Olkin (KMO)

test, and (c) individual measures of sampling adequacy (MSA). Pett, Lackey, and Sullivan (2003) recommended that the test of sphericity should be significant, KMO should be higher than .7, and MSA should be higher than .7. In the analysis, KMO equaled .933, and Bartlett's test of sphericity was .00. The values of 24 MSAs ranged from .888 to .975. All indicators showed the data set is factorable.

The determination of the number of factors was based on multiple standards: (a) eigenvalue greater than 1, (b) scree plot, (c) percentage of variance extracted, (d) Velicer's minimum average partial (MAP) test, and (e) parallel analysis. First, according to the Kaiser–Guttman rule of eigenvalues greater than 1, three factors were extracted. An examination of the scree plot also confirmed a three-factor solution. The EFA with principal component analysis (PCA) method indicated that the three factors explained 72.13% of the total variance, while EFA with principal axis factoring (PAF) showed that the three factors explained 66.25% of the total variance. However, the standard of eigenvalue greater than 1 is widely criticized by scholars. Gorsuch (1983) claimed that this method is only accurate when the number of variables is smaller than 40 and the sample size is large. Zwick and Velicer (1986) were also strongly against using this rule. Therefore, a MAP test was implemented, and the result confirmed the three-factor conclusion. Fifth, the study executed parallel analysis with both PCA and PAF methods. The PCA method indicated that two factors should be extracted, while the PAF method recommended four factors. Based on these five test results, we selected the three-factor model supported by four of the five tests.

The EFA using PAF method based on three factors was executed. The study first employed two types of oblique rotations (direct oblimin and promax), since they assume correlation among factors. Nevertheless, both rotations generated complex structure matrices that contained serious cross-loading issues. Thus the researchers decided to use orthogonal rotation (varimax) to increase interpretability. The rotated factor matrix created by orthogonal rotation was more interpretable than the structure matrix generated by oblique rotation. Then, five items with weak loading and cross-loading problems were removed based on three standards: (a) item loadings on the primary factor must be above .6, (b) the difference between the highest loading and the second

highest loading must be at least .3, and (c) the commonalities must be higher than .5. After removing the problematic items, the study ran the EFA using PAF method with varimax rotation the second time and generated ideal factor loadings for the scale.

Based on the EFA report, the relevance-induced dimension split into two factors. One factor was defined as relevance. The other factor was defined as interest-induced severity, since the four items concerned stakeholders' interests about a crisis. A detailed conceptualization is discussed in a later section. The three-factor model (emotion, relevance, and interest) with 12 items was retained for further analysis (interest,  $\alpha = .91$ ,  $M = 4.84$ ,  $SD = .22$ ; emotion,  $\alpha = .94$ ,  $M = 3.68$ ,  $SD = .14$ ; relevance,  $\alpha = .88$ ,  $M = 3.41$ ,  $SD = .51$ ).

### **Confirmatory Factor Analysis (CFA)**

CFA was used to further test construct validity and the relationships among the three dimensions. According to Hu and Bentler (1999), a good model should pass the following cutoffs: .06 or smaller for root mean square error of approximation (RMSEA); .95 or greater for comparative fit index (CFI), normed-fit index (NFI), and incremental fit index (IFI); and normed chi-square smaller than 5. The initial model fit indicators did not meet these standards. RMSEA was larger than 1, and other model fit indices were smaller than .95. Covariances among error terms were added according to modification indices, and the CFA was rerun. The second CFA demonstrated that the model ideally fit the data. All modification indices were acceptable, ranging from 4.06 to 4.83. Other indicators also showed favorable results,  $\chi^2 = 66.331$ ,  $df = 38$ ,  $\chi^2/df = 1.411$  (RMSEA = .048, CFI = .990, NFI = .966, IFI = .990).

### **Reliability Assessment**

The reliability of the overall scale was .95 ( $M = 4.87$ ,  $SD = .29$ ). The reliabilities of the three dimensions were also acceptable: interest-induced ( $\alpha = .92$ ,  $M = 5.24$ ,  $SD = .07$ ), emotion-induced ( $\alpha = .91$ ,  $M = 4.69$ ,  $SD = .14$ ), and relevance-induced ( $\alpha = .91$ ,  $M = 4.70$ ,  $SD = .16$ ). The appendix provides the final scale.



## Discussion

Two purposes of this study are (a) to offer a definition of perceived crisis severity and (b) to develop a valid and reliable scale to measure the construct. Following Churchill's (1979) scale development guidelines, a three-dimensional scale with 12 items was found to be reliable and valid.

Through theoretical and statistical investigation, the study proposed a three-dimensional scale with 12 items to measure perceived crisis severity. Blame-induced severity, an initially proposed dimension, was excluded from the study based on theoretical and statistical examination. The remaining two dimensions with 17 items generated three factors. After a preliminary EFA test and structure-based CFA test, the relevance-induced severity dimension from the initial scale was further divided into two factors, relevance-induced severity and interest-induced severity. The definitions of emotion-induced severity and relevance-induced severity were retained. Emotion-induced severity denotes a member of a public's affective response to a crisis. Relevance-induced severity is defined as the extent to which a member of a public feels involved in and affected by a crisis. Interest-induced severity was reconceptualized based on the theme of the measurement items. Interest-induced severity represents the extent to which a member of a public desires to know more about a crisis. The three-dimensional scale contains four items for emotion-induced severity, three items for relevance-induced severity, and four items for interest-induced severity.

The three dimensions are strongly associated with perceived crisis severity. As a crisis becomes more severe, stakeholders may become more emotional because they are surprised or scared by the situation. A severe crisis may interest stakeholders because it might threaten their safety. Stakeholders are also willing to know more about the situation and how to protect themselves. Stakeholders might feel more personally involved, thus perceiving greater relevance as the situation becomes more severe, since they are potential victims of a similar crisis. The three dimensions are also associated with each other. Stakeholders may not be interested in the situation if the crisis is not relevant to them. If stakeholders do not feel involvement or relevance regard-

ing the crisis, they are less likely to be emotional about the crisis.

This new crisis severity scale has a distinct advantage over other existing scales because it is the first scale to consider dimensionality issues. Scales with only one or three items lack accuracy because a respondent's reflection could be easily influenced by his or her instant thoughts. In addition, if a scale only contains one item, it cannot assess reliability or validity. With the creation of this multidimensional scale, researchers may check reliability and validity when they measure crisis severity.

To the best of the researchers' knowledge, this study is the first to operationalize the concept of perceived crisis severity and develop a multidimensional scale for the construct. Since the concept of perceived crisis severity has been discussed and examined in crisis literature over time, the operational definition and new scale could generate further discussion and facilitate this line of research. The inconsistent findings revealed in previous studies could potentially be resolved by the employment of this scale. In addition, since SCCT initially proposed this concept, the operationalization of perceived crisis severity could help other scholars reconsider the importance of the construct in the SCCT model. As crisis severity generates different public perceptions of an organization and a crisis situation, SCCT should consider if perceived crisis severity influences other variables in the model. Since SCCT aims to explain a crisis dynamic and guide the response strategy selection process, the addition of the crisis severity construct can increase the explanatory power of the model.

Practically, crisis managers could consider the dimensions included in the new scale when they want to assess whether the influence of a crisis is powerful. As Coombs (1995) stated, the severity of a crisis influences an organization's strategy selection. In a severe crisis, publics expect certain explanations about the situation, and an organization should seek strategies to soothe publics (Coombs, 1995). Therefore crisis managers could survey a small group of stakeholders about perceived crisis severity. If the result shows that the crisis is severe, crisis managers must pay more attention to the situation and design strategies that do not antagonize stakeholders.

The proposed dimensions could also guide an organization's crisis message selection process. In certain situations, an organization may

hope to intentionally increase or decrease stakeholders' perceived crisis severity. For example, when Zika virus hits, people may not be fully aware of the potential harm it may bring. However, the government wants to increase people's awareness of the issue and intentionally increase people's perceived crisis severity. When drafting public messages, they should think about how to make Zika virus relevant to people. In addition, the message should also arouse people's emotions, such as fear and stress. The message should also arouse people's interest in keeping track of the development of the crisis.

### **Limitations and Future Research**

The study bears three major limitations. The first limitation resides in crisis situations. Although the study included five crisis scenarios to cover multiple types of crises and organizations, it is still premature to assume that the scale applies to all types of crises. Second, since the study employed real crises and organizations, prior reputation might contaminate participants' perceptions of severity. Third, different types of validity such as discriminant validity, convergent validity, and predictive validity, were not discussed in this study.

Future research should apply the new scale to test the key relationships in the SCCT model, especially the relationship between severity and responsibility as well as the relationship between severity and reputation. Establishing and confirming these relationships would further explicate and improve SCCT.

Regardless of its limitations, this study provides a useful instrument to measure an important construct, perceived crisis severity in crisis communication, and the researchers believe that adding a perceived crisis severity variable can help form a holistic view of crisis situations and advance the understanding of crisis dynamics.

## **Appendix: The Final Perceived Crisis Severity Scale**

### **Interest-Induced Severity ( $\alpha = .92$ , $M = 5.24$ , $SD = .07$ )**

IIS 1: I care about the crisis.

IIS 2: Further news about the incident is of my interest.

IIS 3: I hope to know more about the incident.

IIS 4: I think the crisis interests me.

### **Emotion-Induced Severity ( $\alpha = .91$ , $M = 4.69$ , $SD = .14$ )**

EIS 1: The crisis incurred my sense of stress.

EIS 2: I feel quite anxious about the crisis.

EIS 3: My apprehension grew as I knew more about the crisis.

EIS 4: I'm worried about the crisis situation.

### **Relevance-Induced Severity ( $\alpha = .91$ , $M = 4.70$ , $SD = .16$ )**

RIS 1: I feel influenced by this crisis.

RIS 2: I feel involved in the crisis.

RIS 3: I find this crisis relevant to me.

RIS 4: The crisis is meaningful to me.

**Ziyuan Zhou** is a doctoral student at the University of Alabama. His research focuses on stakeholders' perceptions and behaviors during corporate crises as well as crisis communication strategies. He received his master's degree in public relations from Boston University.

**Eyun-Jung Ki**, PhD, is a professor in the Department of Advertising and Public Relations at the University of Alabama. She has published more than 50 peer-reviewed articles and was the lead editor of *Public Relations as Relationship Management: A Relational Approach to the Study and Practice of Public Relations* (2nd ed.). Her primary research areas are organization–public relationships, emerging media, crisis communication, and global public relations.

**Kenon A. Brown**, PhD, is an associate professor and the graduate coordinator for the Department of Advertising and Public Relations at the University of Alabama, as well as the 2017 recipient of the Early Career Research Award from the International Communication Association's Sports Communication Interest Group. His research interests include image and reputation management, particularly in sports, and minority recruitment in mass communication. Kenon is also the programming director for the Alabama Program in Sports Communication and works closely in multiple capacities with several sport and entertainment organizations, including the International Olympic Committee, Twitch, FOX Sports, NASCAR, and the Country Music Association.

## ORCID

Ziyuan Zhou  <https://orcid.org/0000-0002-2264-7281>

## Note

1. Both data sets include missing values in gender and race and people who identify themselves as multiracial. Therefore the gender and race breakdowns do not equal overall sample size.

## References

- Arpan, L. M., & Pompper, D. (2003). Stormy weather: Testing “stealing thunder” as a crisis communication strategy to improve communication flow between organizations and journalists. *Public Relations Review*, 29, 291–308. [https://doi.org/10.1016/s0363-8111\(03\)00043-2](https://doi.org/10.1016/s0363-8111(03)00043-2).
- Arpan, L. M., & Roskos-Ewoldsen, D. R. (2005). Stealing thunder: Analysis of the effects of proactive disclosure of crisis information. *Public Relations Review*, 31, 425–433. <https://doi.org/10.1016/j.pubrev.2005.05.003>.
- Avery, E. J., Lariscy, R. W., Kim, S., & Hocke, T. (2010). A quantitative review of crisis communication research in public relations from 1991 to 2009. *Public Relations Review*, 36, 190–192. <https://doi.org/10.1016/j.pubrev.2010.01.001>.
- Brown, K. A., & Ki, E. J. (2013). Developing a valid and reliable measure of organizational crisis responsibility. *Journalism & Mass Communication Quarterly*, 90, 363–384. <https://doi.org/10.1177/1077699013482911>.
- Burger, J. M. (1981). Motivational biases in the attribution of responsibility for an accident: A meta-analysis of the defensive-attribution hypothesis. *Psychological Bulletin*, 90, 496–512. <https://doi.org/10.1037/0033-2909.90.3.496>.
- Chuang, S. C., Cheng, Y. H., Chang, C. J., & Yang, S. W. (2012). The effect of service failure types and service recovery on customer satisfaction: A mental accounting perspective. *Service Industries Journal*, 32, 257–271. <https://doi.org/10.2139/ssrn.1869434>
- Churchill, G. A. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research*, 16, 64–73. <https://doi.org/10.2307/3150876>
- Claeys, A. S., Cauberghe, V., & Vyncke, P. (2010). Restoring reputations in times of crisis: An experimental study of the situational crisis communication theory and the moderating effects of locus of control. *Public Relations Review*, 36, 256–262. <https://doi.org/10.1016/j.pubrev.2010.05.004>
- Coombs, W. T. (1995). Choosing the right words: The development of guidelines for the selection of the “appropriate” crisis-response strategies. *Management Communication Quarterly*, 8, 447–476. <https://doi.org/10.1177/0893318995008004003>
- Coombs, W. T. (1998). An analytic framework for crisis situations: Better responses from a better understanding of the situation. *Journal of Public*

- Relations Research*, 10, 177–191. [https://doi.org/10.1207/s1532754xjpr1003\\_02](https://doi.org/10.1207/s1532754xjpr1003_02)
- Coombs, W. T. (2004). Impact of past crises on current crisis communication: Insights from situational crisis communication theory. *Journal of Business Communication*, 41, 265–289. <https://doi.org/10.1177/0021943604265607>
- Coombs, W. T. (2007). Protecting organization reputations during a crisis: The development and application of situational crisis communication theory. *Corporate Reputation Review*, 10, 163–176. <https://doi.org/10.1057/palgrave.crr.1550049>
- Coombs, W. T. (2010). Parameters for crisis communication. In W. T. Coombs & S. J. Holladay (Eds.), *The handbook of crisis communication* (pp. 17–53). Malden, MA: Blackwell. <https://doi.org/10.1002/9781444314885.ch1>
- Coombs, W. T., & Holladay, S. J. (1996). Communication and attributions in a crisis: An experimental study in crisis communication. *Journal of Public Relations Research*, 8, 279–295. [https://doi.org/10.1207/s1532754xjprro804\\_04](https://doi.org/10.1207/s1532754xjprro804_04)
- Coombs, W. T., & Holladay, S. J. (2002). Helping crisis managers protect reputational assets: Initial tests of the situational crisis communication theory. *Management Communication Quarterly*, 16, 165–186. <https://doi.org/10.1177/089331802237233>
- Coombs, W. T., & Holladay, S. J. (2005). An exploratory study of stakeholder emotions: Affect and crises. In N. M. Ashkanasy, W. J. Zerbe, & C. E. J. Hartel (Eds.), *Research on emotion in organizations* (pp. 263–280). Bingley, England: Emerald Group. [https://doi.org/10.1016/s1746-9791\(05\)01111-9](https://doi.org/10.1016/s1746-9791(05)01111-9)
- Fiske, S. T., & Taylor, S. E. (1991). *Social cognition: From brains to culture* (2nd ed.). New York, NY: McGraw-Hill.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Mahwah, NJ: Erlbaum.
- Hong, S., & Len-Ríos, M. E. (2015). Does race matter? Implicit and explicit measures of the effect of the PR spokesman's race on evaluations of spokesman source credibility and perceptions of a PR crisis' severity. *Journal of Public Relations Research*, 27, 63–80. <https://doi.org/10.1080/1062726x.2014.929502>
- Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, 6, 1–55. <https://doi.org/10.1080/10705519909540118>
- Inyang, A. E. (2015). The buffering effects of salesperson service behaviors on


- customer loyalty after service failure and recovery. *Journal of Managerial Issues*, 27, 102–119. <https://www.jstor.org/stable/44113686>
- Isaacson, T. E. (2012). *Evaluating the crisis response strategies of a university basketball program: How do reactions differ based on apologies, crisis severity, and team identification?* (Unpublished doctoral dissertation). Michigan State University, East Lansing.
- Kiambi, D. M., & Shafer, A. (2016). Corporate crisis communication: Examining the interplay of reputation and crisis response strategies. *Mass Communication and Society*, 19, 127–148. <https://doi.org/10.1080/15205436.2015.1066013>
- Laufer, D., Gillespie, K., McBride, B., & Gonzalez, S. (2005). The role of severity in consumer attributions of blame: Defensive attributions in product-harm crises in Mexico. *Journal of International Consumer Marketing*, 17, 33–50. [https://doi.org/10.1300/j046v17n02\\_03](https://doi.org/10.1300/j046v17n02_03)
- Lawshe, C. H. (1975). A quantitative approach to content validity. *Personnel Psychology*, 28, 563–575. <https://doi.org/10.1111/j.1744-6570.1975.tb01393.x>
- Lee, B. K. (2004). Audience-oriented approach to crisis communication: A study of Hong Kong consumers' evaluation of an organizational crisis. *Communication Research*, 31, 600–618. <https://doi.org/10.1177/0093650204267936>
- McCollough, M. A. (2009). The recovery paradox: The effect of recovery performance and service failure severity on post-recovery customer satisfaction. *Academy of Marketing Studies Journal*, 13, 89–104.
- Park, S. A., & Len-Ríos, M. E. (2010). Who suffers? The effect of injured party on attributions of crisis responsibility. In T. W. Coombs & S. J. Holladay (Eds.), *The handbook of crisis communication* (pp. 591–606). Malden, MA: Blackwell.
- Pett, M. A., Lackey, N. R., & Sullivan, J. J. (2003). *Making sense of factor analysis: The use of factor analysis for instrument development in health care research*. Thousand Oaks, CA: Sage.
- Riaz, Z., & Khan, M. I. (2016). Impact of service failure severity and agreeableness on consumer switchover intention: Mediating role of consumer forgiveness. *Asia Pacific Journal of Marketing and Logistics*, 28, 420–434. <https://doi.org/10.1108/apjml-07-2015-0106>
- Robbennolt, J. K. (2000). Outcome severity and judgments of “responsibility”:



- A meta-analytic review. *Journal of Applied Social Psychology*, 30, 2575–2609. <https://doi.org/10.1111/j.1559-1816.2000.tb02451.x>
- Shaver, K. G. (1970). Defensive attribution: Effects of severity and relevance on the responsibility assigned for an accident. *Journal of Personality and Social Psychology*, 14, 101–113.
- Stephens, K. K., Malone, P. C., & Bailey, C. M. (2005). Communicating with stakeholders during a crisis evaluating message strategies. *Journal of Business Communication*, 42, 390–419. <https://doi.org/10.1177/0021943605279057>
- Thomas, E. A. C., & Parpal, M. (1987). Liability as a function of plaintiff and defendant fault. *Journal of Personality and Social Psychology*, 53, 843–857. <https://doi.org/10.1037/0022-3514.53.5.843>
- Tsarenko, Y., & Tojib, D. (2012). The role of personality characteristics and service failure severity in consumer forgiveness and service outcomes. *Journal of Marketing Management*, 28, 1217–1239. <https://doi.org/10.1080/0267257x.2011.619150>
- Vassilikopoulou, A., Siomkos, G., Chatzipanagiotou, K., & Pantouvakis, A. (2009). Product-harm crisis management: Time heals all wounds? *Journal of Retailing and Consumer Services*, 16, 174–180. <https://doi.org/10.1016/j.jretconser.2008.11.011>
- Walster, E. (1966). Assignment of responsibility for an accident. *Journal of Personality and Social Psychology*, 3, 73–79. <https://doi.org/10.1037/h0022733>
- Wang, Y. S., Wu, S. C., Lin, H. H., & Wang, Y. Y. (2011). The relationship of service failure severity, service recovery justice and perceived switching costs with customer loyalty in the context of e-tailing. *International Journal of Information Management*, 31, 350–359. <https://doi.org/10.1016/j.ijinfomgt.2010.09.001>
- Weun, S., Beatty, S. E., & Jones, M. A. (2004). The impact of service failure severity on service recovery evaluations and post-recovery relationships. *Journal of Services Marketing*, 18, 133–146. <https://doi.org/10.1108/08876040410528737>
- Zaichkowsky, J. L. (1994). The personal involvement inventory: Reduction, revision, and application to advertising. *Journal of Advertising*, 23, 59–70. <https://doi.org/10.1080/00913367.1943.10673459>
- Zwack, W. R., & Velicer, W. F. (1986). Comparison of five rules for determining the number of components to retain. *Psychological Bulletin*, 99, 432–442. <https://doi.org/10.1037/0033-2909.99.3.432>



# Engaging Communities in Emergency Risk and Crisis Communication: A Systematic Review and Evidence Synthesis

Julie M. Novak ,<sup>a</sup> Ashleigh M. Day,<sup>a</sup> Pradeep Sopory,<sup>a</sup> Lee Wilkins,<sup>a</sup> Donyale Padgett,<sup>a</sup> Stine Eckert,<sup>a</sup> Jane Noyes,<sup>b</sup> Tomas Allen,<sup>c</sup> Nyka Alexander,<sup>c</sup> Marsha Vanderford,<sup>c</sup> and Gaya Gamhewage<sup>c</sup>

<sup>a</sup>Department of Communication, Wayne State University, Detroit, Michigan, USA; <sup>b</sup>School of Health Sciences, Bangor University, Bangor, Wales; <sup>c</sup>World Health Organization, Geneva, Switzerland

## ABSTRACT

The World Health Organization (WHO) commissioned systematic reviews to assist with the development of new emergency risk communication guidelines that will impact responses and distribution of resources at all levels. This mixed-method evidence synthesis, guided by Cochrane principles and methods, examined the extant research in countries throughout the world, published from 2003 to 2016, related to the best practices to engage communities in preparing for and responding to emergency events with public health implications. Although few studies directly examined which strategies or tactics effectively engage public participation, many studies reinforced the importance of community participation. The findings support the perspective that emergency events are communicatively understood by all publics and that they benefit from emergency risk communication before, during, and after such events, especially when grounded in local contexts. Although the importance of local context limits the generalizability of risk communication, it is important to continue studying strategies and tactics to cultivate participation among all stakeholders.

**KEYWORDS:** Community engagement; crisis; emergency risk communication

Disaster and emergency events with public health implications are identified and understood by publics through communication, messages, and interactions (words label and help define concrete realities) and, therefore, are powerfully shaped by emergency risk communication before, during, and after such events (Centers for Disease Control

**CONTACT** Julie M. Novak • E-mail: [jmnovak@wayne.edu](mailto:jmnovak@wayne.edu) • Department of Communication, Wayne State University, Detroit, MI 48202, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

and Prevention [CDC], 2014, 2018). Many public health agencies at multiple levels—local, state, regional, national, and international—operate organizational divisions dedicated to planning, preparedness, response, and recovery related to emergency events. These hierarchical agencies directly communicate and interact with relevant publics and must effectively coordinate efforts within their organizations as well as interorganizationally (CDC, 2014, 2018). Thus, the World Health Organization (WHO), as an agency of the United Nations (UN), commissioned 12 systematic reviews and evidence-based syntheses to inform the development of WHO Risk Communication Guidelines on Emergency Risk Communication. The question of interest for this systematic review-synthesis was, *what are the best ways to engage communities in emergency risk communication activities to respond to events/contexts?*

Prior to identifying data-based primary studies, we conducted a search for related literature reviews. The search uncovered 12 existing reviews regarding the focus of inquiry. All were narrative; none were quantitative meta-analyses. Although we did not conduct a structured review of these existing reviews nor extract detailed findings from them, we appraised their relevancy using the criteria in Noyes et al. (2019) and quality using a modified Assessment of Multiple Systematic Reviews (AMSTAR) checklist (Shea et al., 2007). Seven were of moderate quality and subsequently analyzed for summary findings (Gurabardhi, Gutteling, & Kuttschreuter, 2005; Lettieri, Masella, & Radaelli, 2009; Levac, Toal-Sullivan, & O'Sullivan, 2012; McCaffrey, 2015; Savoia, Lin, & Viswanath, 2013; Schiavo, Leung, & Brown, 2014; Wachinger, Renn, Begg, & Kuhlicke, 2013).

These existing reviews focused on risk communication ( $n = 3$ ), emergency/disaster preparedness ( $n = 2$ ), disaster management ( $n = 1$ ), and risk perception ( $n = 1$ ) for a variety of emergency events, including disasters in general, emergent infectious diseases, natural disasters, industrial hazards, and technological hazards. They predominantly drew from studies on events in the developed world, particularly in the United States/Canada, Western Europe, and Australia. Only one review focused on low- to moderate-income countries and reported inconclusive findings due to a paucity of studies.

The summary of review findings revealed first that how best to en-

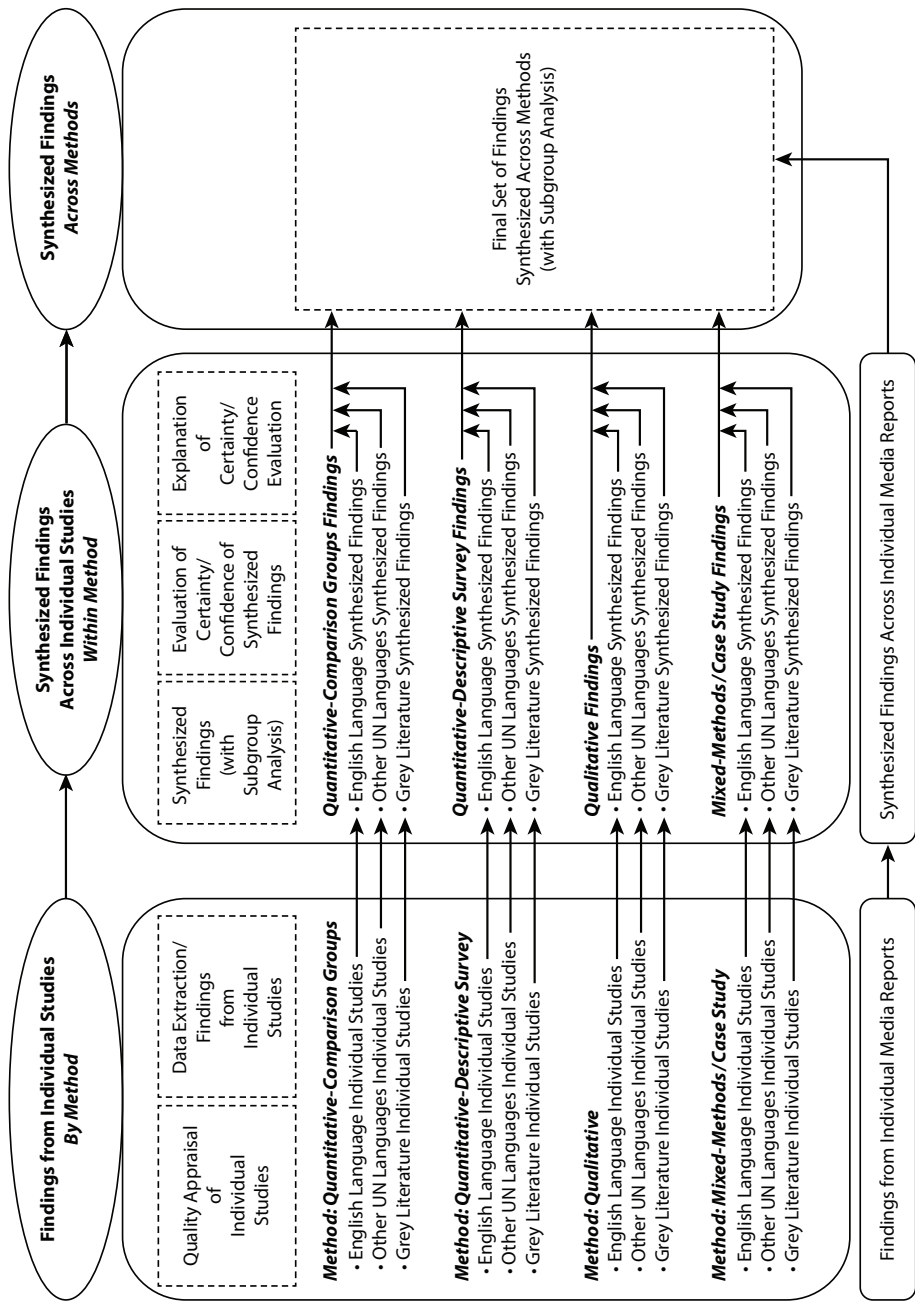
engage communities in activities is rarely of *direct* focus of inquiry and minimally examined. Second, community is not a universally defined concept. Third, public participation, in general, is associated with improved preparedness/response actions. And, fourth, most studies continue to place extensive focus on individual and contextual factors in relation to household/community emergency preparedness rather than community engagement/participation in emergency activities. Therefore the purpose of this systematic review is to identify evidence-based studies published since 2003 that query the best ways to engage communities in emergency risk communication activities to respond to disaster/emergency events. We provide an extensive explanation of the methodology employed to conduct the systematic review, and following a discussion of the results, we identify gaps in the literature, practice recommendations that are grounded in the evidence synthesis, and suggestions for future research that will enhance and extend practice guidelines.

## Method

This systematic review-synthesis includes data-based primary studies of quantitative, qualitative, and mixed-method/case study approaches conducted throughout the world and reported in English as well as other UN languages, including Arabic, Chinese, French, Russian, and Spanish, from 2003 to 2016, as specified by WHO. Our approach and process drew from principles and guidelines in the *Cochrane Handbook* and by the Cochrane Qualitative and Implementation Methods Group (Higgins & Green, 2011). Figure 1 presents the overall design for the evidence synthesis.

### Systematic Review Process

**Literature search.** We employed a two-phase strategy for literature searching. We conducted a general search, intentionally broad in scope, followed by a narrow search focused on the WHO question. Figure 2 shows the wide range of search terms. After a general search using the Wayne State University Library Summon function, we searched within individual databases (e.g., Web of Science, PubMed/Medline-



**FIGURE 1** Process design of synthesis of evidence from data-based primary studies.

Disaster*	Community/community at large
Disaster plan*	Emergency management
Communication	Trust
Risk communication	Resilience
Emergenc*	Mental health
Hazard*	Public health
eRisk*	Non-government (various)
Threat*	Disaster/emergency/crisis response
Emergency preparedness	Public response
Emergency management	Awareness (public)
Crisis (or other truncation used in a specific database: ?, #) Crisis communication	Activity, action
Disaster preparedness	Risk prevention
Hazard communication	Participation (public, community)
Emergency communication	Response/responsiveness
Catastrophe communication	Preparedness
Health communication	Decision/decision making

**FIGURE 2** Search terms.

National Library of Medicine [NLM]). Similarly, the article selection process occurred in two stages. First, all literature that was related to disaster/emergency risk communication, the WHO question, and the WHO phenomenon of interest was selected. There were no preliminary conceptual definitions for “best ways” (neither strategy nor tactic), community, or participation. Instead, WHO guided us with documents and ongoing consultation to keep the scope broad. They requested, reviewed, and provided feedback on periodic reports and rapid knowledge maps that documented the literature search process in real time. Second, this literature was narrowed to select only relevant data-based primary study articles using quantitative, qualitative, or mixed-method/case study methodologies.

The search for grey literature, in all languages, used Google Scholar and general Google search as the primary information sources. Grey literature similarly had to be relevant data-based primary study articles using quantitative, qualitative, or mixed-method/case study methodologies. Such articles, however, were not published in academic, refereed journals or indexed by library databases. In addition, an experienced librarian at the National Hazards Center library at the University of Colorado–Boulder, United States, conducted a search specifically for grey literature in close consultation with a team member who was physically present. As shown in Figure 1, these grey literature studies were treated similarly to the academic primary studies.

For articles in English, the search and selection stages were conducted by an experienced librarian with subject-matter expertise and primary members of the research team. For articles in other UN languages, fluent readers and writers of these languages assisted with respective search and selection. Additionally, searches utilized some language-specific databases. All team members participated in norming and training sessions, which were done in a group setting, for search, selection, appraisal, and extraction tasks.

For all resultant articles in the literature search, relatively broad inclusion criteria were employed. Research related to the practice of risk communication and the process of disaster management—with no preference for any specific emergency or health hazards—was included. Additionally, research within the viewpoint or scope set by the risk communication field (e.g., trust, uncertainty, communities, health, misinformation, social/media, and messages) was included. Exclusion criteria consisted of research published previous to 2003, research in organizational risk communication and disaster management (e.g., technological failures), and research outside of the scope of the study, like laboratory studies.

**Article appraisal.** We appraised the quality of individual quantitative primary studies by using the Effective Practice and Organization of Care (EPOC; 2015) risk of bias tool. This tool provides nine criteria for assessing randomized control trials, nonrandomized control trials, and control before–after studies. Detailed information on the definitions of levels of risk used in this tool is available in Section 12.2.2 of

the *Cochrane Handbook*. An adapted version of Davids and Roman's (2014) quality appraisal criteria was also used to appraise quantitative primary studies. This tool assessed on a 2-point scale ranging from 0 (*not reported*) to 1 (*reported*) the following areas: sampling, response rate, validity and reliability, sources of data, content and focus of study, and relevancy to the corresponding question. Final ratings were determined by percentage: weak (0%–33.9%), moderate (34%–66.9%), and strong (67%–100%). We appraised individual qualitative studies by using the Critical Appraisal Skills Programme (CASP; 2013). CASP assesses appropriateness of qualitative methodology, data collection, relationship between researcher and participants, ethics, rigor of data analysis, clarity of findings, and value of research. Each area in CASP is assessed using “yes,” “no,” or “can’t tell.” Studies received a final rating of high (no significant flaws), moderate (minor flaws impacting credibility/validity), low (some flaws likely to impact credibility/validity), or very low (significant flaws impacting credibility/validity). For mixed-method/case studies, we utilized Pluye and colleagues’ (2011) Mixed Methods Appraisal Tool (MMAT), which assesses the employed methods and methodological quality. Each area in MMAT is assessed using “yes,” “no,” or “can’t tell.” Studies received a final rating of high (no significant flaws), moderate (minor flaws impacting credibility/validity), low (some flaws likely to impact credibility/validity), or very low (significant flaws impacting credibility/validity).

Two team members (the two lead authors) individually assessed the quality of all relevant articles. After the appraisals were complete, they were reviewed by the principal investigator (the third author). Assessing team members reviewed any conflicts by revisiting the article under question together and discussing each part of the applicable appraisal tool in relation to the article. Conflicts and general results of quality appraisals also were discussed as a team at weekly meetings.

**Data extraction.** The following study characteristics were extracted from individual data-based primary studies of all method types: method, country focus, disaster/emergency type, disaster/emergency phase, and any at-risk/vulnerable populations. To extract the findings, we used the general process of reading and rereading the abstract, results/findings/analysis, and discussion and conclusion sections to



isolate the findings of interest. We did this process for all methodological streams: quantitative-comparison groups (QN-CG), quantitative-descriptive survey (QN-DS), qualitative (QL), and mixed-method/case study (MM, CS).

A quantitative meta-analysis was not suitable due to the very small number of studies that used comparison groups (randomized or non-randomized). As such, as recommended in Section 11.7.2 of the *Cochrane Handbook*, dealing with results without meta-analyses, we followed a narrative summary approach to extract findings from studies in all four methodological streams. Quantitative and qualitative evidentiary support for each finding was extracted. The two lead authors completed data extraction, which was also reviewed by the third author. Any disagreements between team members and extracted findings were reviewed by team members by revisiting the article/extraction under question together. A codebook for extracting study characteristics and findings was developed and revised with expert input and feedback.

**Data synthesis.** The synthesis of findings was done in two stages, as presented in the process design (see Figure 1). In the first stage, findings from individual studies were synthesized within methodological streams, and then these within-method synthesized findings were evaluated for certainty/confidence using appropriate tools (e.g., GRADE, GRADE-CERQual). In the second stage, the within-method synthesized findings were synthesized across methodological streams, taking into account the certainty/confidence evaluations. Whenever the findings from within yet different methodological streams supported and amplified each other, they were combined into higher order findings that represented synthesis across the method streams. The evaluation of certainty in the within-method synthesized findings was kept in mind during this process. Very few synthesized findings within a methodological stream provided evidence that countered the synthesized findings from other methodological streams. Whenever this happened, we strived to retain this finding as a separate finding in the final set of across-method findings or used it to modify an existing across-method finding. In both the within-method and across-method stages, the synthesis of findings included subgroup analyses. These subgroup analyses included examination of type of emergency event,

phase of emergency event, country of emergency event, and presence of vulnerable population. The last two subgroups allowed considerations of equity in the synthesized findings.

## **Results**

### **Study Characteristics**

The summary study characteristics draw from 71 total studies (including 8 from grey literature) of all UN languages (6 in Arabic, 3 in Chinese, 21 in French, 34 in English, 5 in Russian, and 2 in Spanish). Thirty-three of the studies employed quantitative methods, 12 employed qualitative methods, and 26 employed mixed methods/case study approaches. Of this total, 39 were directly/partially relevant, and 32 were indirectly relevant. Given greater team expertise in English versus other UN languages, relevance assessments could not be made similarly across all studies. Nonetheless, even those deemed directly relevant most often compared/discussed community participation to no participation in relation to knowledge or action outcomes rather than comparing/discussing types of strategies or tactics employed in relation to community engagement.

In summary, the studies included disasters in countries distributed throughout the world, which widened the geographical scope (compared to previous reviews) and extended to disaster/emergency events with public health implications. The studies also focused on multiple configurations of phases, although the preparedness phase predominated. There appeared to be an increase in attention to at-risk groups (see Appendixes A and B for characteristics of studies included).

### **Findings Synthesis**

For the findings synthesis on the best ways to engage communities in emergency risk communication activities to respond to events/contexts, 71 studies were included, appraised for quality, and used for data extraction and formulating synthesized statements within methodological streams, which, in turn, were evaluated for certainty and then synthesized across methodological streams. Again, and extremely noteworthy, the studies rarely examined which ways (including strategies or tactics)

are most effective for engaging communities. Some studies employed a type of community participation and affirmed its importance yet fell short of rigorously studying the strategy/tactic or testing the efficacy of various strategies/tactics employed to achieve said engagement.

Three related synthesized findings represent findings across all four methodological streams (see Appendix C for a table of all synthesized findings with reference citations). First, meetings prior to an event garner better attendance than those during or after an event. Moreover, meetings prior to an event appear to influence actions related to preparedness and response more effectively than meetings during or after an event. (Note that *meetings* as an activity is the term used here for all gatherings, including community members, regardless of purpose and implemented agenda.) Second, many studies emphasized and concluded the importance of including some community members in meetings as both planners and attendees. Credible community members as planners are important to include. The purpose of the meetings varied across studies, including plan development, information dissemination, training on roles and responsibilities, and conducting preparedness activities. Third, social relationships and networks stand out in their importance on preparedness and response/recovery actions and are a positive outcome of effective meetings. Meetings secondarily help to develop and sustain relationships characterized by perceptions of credibility, trust, understood role responsibilities, and actions characterized by collaboration and coordination.

Meetings may well be a strategy for achieving a goal of community engagement. Meetings in the reviewed studies varied in purpose and composition of planners, facilitators, and attendees. Example meetings ranged from engaging communities in discussion groups, open forums, educational presentations, and sessions during which families mapped household evacuation routes. Some interventions noted the success of engaging primary and lay health care workers and other credible, trusted community members as planners/facilitators. Of note, training on the roles and responsibilities of each community group (e.g., households, neighborhoods, volunteer groups, organizations) and governmental group appeared to help coordination of efforts. Such focus on differing roles and responsibilities optimally included considerations of

different (as well as similar) lived contexts and past experiences. Training of this nature also may have helped resolve issues of risk paradox tied to perception and experience, while relationship building and bonding not only served to create trust and confidence in community leaders but also served to create social connectedness and networks.

There are three synthesized findings across three of the four methodological streams. First, disaster/emergency events happen locally. While important for engaging communities in activities, local context also needs to be considered throughout all agenda items and features of an event and at all levels of perspective (QN-DS, QL, MM, CS). Second, risk perception corresponds to individual actions of preparedness for and response to disasters/emergency events. Although the correspondence is frequently positive, there do exist inverse relationships for individuals within a community (QN-CG, QN-DS, MM, CS). Third, when communicating messages to individuals about potential/actual events, the messages are more likely to be persuasive if they are framed and targeted for a specific public, congruent in content, and disseminated through many channels (QN-CG, QN-DS, MM, CS). This also appears true for messages that encourage publics to attend meetings related to potential/actual events.

One synthesized finding across two of four methodological streams (QL, MM, CS) relates partially to the question of study. Access to material resources and technologies impact infrastructure/capacity, participation in activities as well as preparedness and response actions, and innovation/learning from past events.

For more details on individual study findings and synthesized findings within and across methodological streams, see the full report submitted to WHO (2018). The report cites the related studies on which findings are grounded. Additionally, the report contains the certainty/confidence assessments of the synthesized findings within methodological streams.

## **Discussion**

The present review-synthesis in comparison to the seven preexisting reviews includes evidence-based research conducted in the field

throughout the world and published in all UN languages. Results from study characteristics reveal an increased scope in relation to the geographical countries of disaster/emergency onset. Most of the studies cited in this review were done in the context of general/multiple types of events ( $n = 25$ ) or floods ( $n = 19$ ). All of the event types in the existing reviews (and more) are represented. Similarly, there is more evidence about the phase(s) of the events studied and multiple configurations of the phases. Like the existing reviews, the studies cited in this review usually approached risk communication as a multidisciplinary phenomenon. The consideration of high-risk and vulnerable populations is more evident in the articles yet still limited as related to the level of need in practice and society.

Emergency events with public health implications happen locally. Including communities is vital. To include community members as planners/facilitators of activities and to engage as many as possible in activities appears to be evidence supported and a best practice. Based on the preceding evidence-based findings synthesis, WHO now guides practitioners responding to potential/actual public health emergencies “to identify people that the community trusts and build relationships with them. Involve them in decision-making to ensure interventions are collaborative, contextually appropriate and that communication is community-owned” (a strong recommendation with moderate quality evidence) (WHO, 2018).

At present, however, there is insufficient evidence as to the “best ways” to engage any local community. The understudied comparison of ways to include the local community or assessments as to what constitutes engagement (participation) during activities likely limits the guideline’s utility. Similarly, it is important to note that the undifferentiated concept of “community” remains problematic by not separating findings specifically related to communities-at-large (official leaders) versus community sectors (formal or informal) or community individuals/households (see WHO, 2018, for details on studies with precisely defined community members).

When parsing the question and the phenomenon of interest, it became apparent that concept and word choice matter. Conceptual and semantic differences exist between disciplines as well as research

and practice paradigms. The creation/use of a typology, prompting more precise classification of the extant research, would (a) provide a visual perspective of the framing of the phenomenon/a of interest, (b) reveal the current knowledge findings/claims, and (c) identify areas in need of future research. Movement toward shared typologies would facilitate more effective and efficient transfer of knowledge and recommendations.

The paucity of directly relevant and high-quality studies likely relates to the preference for publishing outcomes related to community actions after engagement in activities. If such studies had sufficient success in engaging communities, more descriptive detail on the way researchers did engage communities would help to provide rich examples with greater utility. Additionally, WHO's goal for identifying the best ways to engage communities should prompt more researchers to conduct multiples ways of engaging communities within one study. Although the importance of local context may conflict with the goal of generalizable, best ways, descriptive detail about any and all ways of community participation may allow practitioners to better transfer evidence-based findings.

### Gaps in the Literature

The most apparent gap in the literature is the paucity of studies directly related to the phenomenon of interest, *effective ways to engage communities in planning activities and activities for preparedness and response actions*. As discussed, this becomes even more problematic if recommendations differ for different community levels or different types of engagement because the evidence becomes even sparser. More nuanced definitions of community, such as our proposed categorization of "communities-at-large," "community sectors," and "community individuals/households," would help target and evaluate the pragmatic utility of activities. The gaps only widen when also considering potential differences in optimal activities related to the temporal phases of before, during, and after disaster/emergency events. These gaps require separate attention.

## Limitations of the Present Review

As noted, there is a paucity of studies directly relevant to the purpose of studying the best ways to engage communities in activities related to disaster/emergency events with public health implications. Therefore much of the search for literature entailed identifying articles partially or indirectly relevant. Three factors clearly obfuscated the search. One, the more detailed explanation of the question for this review provided by the WHO extensions of the question, introduced more ambiguity, rather than less, as to the question's essence. We are uncertain whether parsing through the ambiguities transfers to any theoretical or practical utility for practice. Two, when searching for partially and indirectly related literature, the initial keywords continue to influence the identified literature even with the addition of more keywords. Thus some partially or indirectly relevant bodies of literature may or may not be identified if they have a unique and distinct nomenclature. Finally, the identification/selection of partially or indirectly relevant bodies of literature is impacted by the researchers' judgment as to what constitutes an indirect relationship. For example, the body of accumulating research on the concept and utility of resilience (not included) is arguably indirectly related and potentially as insightful to the question of this review as those of risk perception and risk communication messaging. Additionally, research in other disciplines regarding community-based participatory research, entertainment education, and engaged scholarship is not included. By conducting and reporting on this review in a transparent manner, these limitations are made explicit.

If the objective of this review had been written from a practitioner perspective, some of the difficulties in identifying and reviewing relevant literature may have indicated a lack of translational fluency in phenomena of interest and approaches to address them between practitioners and researchers. Moreover, to the extent that researchers examine problems and phenomena emergent from the field, they may be adding to the problem by code switching in ways that do not improve the two-way transfer of knowledge.

## **Conclusions**

Public health emergency events always happen locally in communities. The resulting WHO guideline, informed by this review and synthesis, stresses the need to include community members and to “involve them in decision-making to ensure that interventions are collaborative and contextually appropriate and that the community owns the process of communication” (WHO, 2018, p. 14).

Nevertheless, extant, empirical research has rarely examined the ways (strategies or tactics) that are most effective for engaging community participation. Moreover, attention to and examination of the operational concepts for engagement (participation) and community are limited. Future research is needed to query such topics. Likewise, practitioners will do well to consider WHO guidelines in their entirety and document the many aspects of how they plan for, respond to, and evaluate potential/actual emergency events with public health implications.

For engagement to occur on the local level, participatory research, action research, community organizing, and bottom-up strategies should be explored, especially as they relate to longitudinal outcomes and evaluations. As risks, emergencies, and crises perpetually surround us and are occurring at greater frequencies, building a foundation of evidence-based research on the best ways to engage communities in emergency risk communication activities to respond to crisis and/or emergency events is necessary to protect health and safety. Whenever possible, collaborations between researchers and practitioners may effectively and efficiently maximize resources and coordinate learning from/in the field.



## Appendix A: Study Characteristics for English Language Studies

Relevancy	Method general	Country focus	Disaster/emergency type	Disaster/emergency phase	At-risk groups
Direct: 8	QN-CS: 5	Australia: 3	General/multiple: 14	All phases: 1	Children: 2
Indirect: 17	QN-DS: 14	Belgium: 1	Bushfire/wildfire: 2		Immigrants: 2
Partial: 9	QL: 5	Caribbean: 1	Earthquake: 4	Preparation: 10	Indigenous: 1
Unclear: 0	MM, CS: 10	Canada: 2	Flood: 5	Recovery: 1	Latinos: 1
		China: 2	Food safety: 1	Evaluation: 1	
		Congo: 1	Hurricane: 1		
		El Salvador: 1	Industrial: 1	Preparation and onset: 2	
		India: 1	Infectious disease: 1	Preparation and recovery: 1	
		Indonesia: 1	H*NI: 1	Preparation and evaluation: 3	
		Iran: 3	Monkey pox: 1	Onset and containment: 2	
		Israel: 1	SARS: 2	Onset and evaluation: 1	
		Japan: 1	Storm: 1		
		Netherlands: 2	Volcano: 1	Preparation, onset, and containment: 2	
		Singapore: 1		Onset, containment, and recovery: 1	
		Spain: 1			
		Sweden: 1		Preparation, onset, containment, and recovery: 1	
		Thailand: 1			
		Taiwan: 2			
		USA: 11			
		Not Specified: 2			

Note. Total English language data-based primary studies: 34 (includes 1 grey literature). Some categories are not mutually exclusive, and so the frequencies do not sum to 34. Methods were quantitative-comparison groups (QN-CG); quantitative-descriptive survey (QN-DS); qualitative (QL); mixed-method/case study (MM, CS).

## Appendix B: Study Characteristics for Other UN Languages Language Studies

Relevancy	Method general	Country focus	Disaster/ emergency type	Disaster/emergency phase	At-risk groups
Directly relevant: 22	QN-CS: 0	Algeria: 1	General: 11	All phases: 2	Yes: 15 (children, low SES status, older adults, rural households, immigrants, people with disabilities)
	QN-DS: 14	China: 3	Arsenic/lead: 1		
Indirectly relevant: 15	QL: 7	Czech Republic: 1	Chikungunya: 1	Preparation: 6	
	MM, CS: 16	Egypt: 4	Earthquake: 2	Onset: 2	
		Ethiopia: 1	Electromagnetic fields: 1	Containment: 1	
		France: 10	Epidemic diseases: 1	Recovery: 2	
		Germany: 1	Flood: 14	Evaluation: 5	
		Islands of Mayotte and Reunion: 1	Food safety: 1	Preparation and onset: 1	
		Japan: 1	H*N*: 3	Preparation and evaluation: 5	
		Madagascar: 1	Illegal immigrants: 1	Onset and recovery: 1	
		Mexico: 1	Nuclear: 1	Recovery and evaluation: 1	
		Morocco: 1	Volcano: 2	Recovery and preparation: 1	
		Philippines: 2			
		Poland: 1		Preparation, onset, and containment: 6	
		Russia: 5		Preparation, recovery, and evaluation: 3	
		Saudi Arabia: 2		Onset, containment, and recovery: 1	
		Spain: 1			
		United States: 1			
	Not specified: 2				

*Note.* Total other UN language data-based primary studies: 37 (includes 7 grey literature). Some categories are not mutually exclusive, and so the frequencies do not sum to 37. Methods were quantitative-comparison groups (QN-CG); quantitative-descriptive survey (QN-DS); qualitative (QL); mixed-method/case study (MM; CS).

## Appendix C: Synthesis of Findings Across Methodological Streams

TABLE C.1 *Four Methodological Streams*

Phenomenon of interest/outcome	Synthesized finding across all four method streams (with country, type, and phase of disaster; vulnerable population contexts)	Citations (first author) supporting synthesized finding across method streams <sup>a</sup>	Evaluation of certainty/ confidence <sup>b</sup>
Activities	Meetings prior to an emergency event appear to be more effective than meetings during an emergency event.  [This synthesized finding emerges when separating out from the following two synthesized findings the aspect that the activities/ gatherings are directed toward outcomes of preparedness rather than response.]	Ardalan (2010); Ardalan (2013); Cretikos (2008); Falconi (2012); Jahangiri (2010); Kapucu (2008); Linnell (2014); McComas (2003); Mei (2013); Perry (2008); Tuerk (2013) AR; Al-Shahri (2014) AR; Al-Tuwairqi (2003) AR; Xie (2013) CH; Affleranger (2003) FR; Chahraoui (2003) FR; Duchêne (2004) FR; Gaillard (2002) FR; Gaillard (2008) FR; Gondard-Delacroix (2004) FR; Heitz (2013) FR; Rode (2008) FR; Setbon (2009) FR; Tamru (2002) FR; Vinet (2005) FR; Gabrichidze (2013) RU; Podkorytov (2014) RU	QN-CG (GRADE): Moderate QN-DS (GRADE Adapted): Moderate to Low QL (CERQual): Moderate to Low MM, CS (as appropriate): Moderate
Activities	When leaders, with formal responsibilities related to emergencies, include community individuals (as planners and attendees) in preevent meetings for 1) plan/s development, 2) information dissemination, 3) training on who is responsible for what and what to do—social responsibility, 4) conducting preparedness actions, and 5) relationship bonding/building, there are increases in preparedness and response actions.	Ardalan (2010); Ardalan (2013); Asharose (2015); Cretikos (2008); Falconi (2012); Jahangiri (2010); Karan (2007); McComas (2003); Mei (2013); Mitchell (2013); Perry (2008); Tuerk, (2013); Al-Sayed (2010) AR; Al-Shahri (2014) AR; Al-Tuwairqi (2003) AR; Ouda (2010) AR; Zahraan (2006) AR; Xie (2013) CH; Affleranger (2003) FR; Chahraoui (2003) FR; Duchêne (2004) FR; Gaillard (2002) FR; Gaillard (2008) FR; Gondard-Delacroix (2004) FR; Heitz (2013) FR; Kingdom of Morocco (2005) FR; Rode (2008) FR; Setbon (2009) FR; Tamru (2002) FR; Vinet (2005) FR; Gabrichidze (2013) RU; Podkorytov (2014) RU	QN-CG (GRADE): Moderate QN-DS (GRADE Adapted): Moderate to Low QL (CERQual): Moderate MM, CS (as appropriate): Moderate
Activities	Events with credible public officials and experts help to build relationships of trust and confidence that transfers into coordination and social connectedness. High levels of trust (and similarly low levels of distrust) may be associated with increased and/or decreased risk perception, participation in and satisfaction with activities, and preparedness/response actions.	Eisenman (2009); Falconi (2012); Kapucu (2008); McComas (2003); Mei (2013); Paek (2010); Perko (2013); Terpstra (2011); Kurtovaya (2015) RU	QN-CG (GRADE): Low QN-DS (GRADE Adapted): Low QL (CERQual): Low MM, CS (as appropriate): Moderate

<sup>a</sup>English has no suffix. AR = Arabic. CH = Chinese. FR = French. RU = Russian. SP = Spanish.

<sup>b</sup>QN-CG (GRADE): high, moderate, low, very low; QN-DS (GRADE Adapted): high, moderate, low, very low; QL (CERQual): high, moderate, low, very low; MM, CS (as appropriate): high, moderate, low, very low. Only English language studies from Section 4.5 are considered.

**TABLE C.2** *Three Methodological Streams: QN-DS, QL, MM, CS*

Phenomenon of interest/outcome	Synthesized finding across three method streams (with country, type, and phase of disaster; vulnerable population contexts)	Citations (first author) supporting synthesized finding across method stream <sup>b</sup>	Evaluation of certainty/ confidence <sup>a</sup>
Activities	Local contexts and culture are very important and may impact willingness to participate in activities and engage in actions for disaster preparedness and response.	Asharose (2015); Masuda (2006); Mei (2013); Prior (2008); Roder (2016); Winters (2014); Al-Sayed (2010); AR; Al-Tuwairqi (2003); AR; LuftAllah (2010) AR; Ouda (2010) AR; Zaharan (2006) AR; Lu (2010) CH; Affletranger (2003) FR; Baggio (2006) FR; Bouaouli (2006) FR; D'Ercole (2002) FR; Erlich (2000) FR; Gaillard (2002) FR; Gaillard (2008) FR; Heitz (2013) FR; Kingdom of Morocco (2005) FR; Maret (2008) FR; WHO (2004) FR; WHO (2011) FR; Kingdom of Morocco (2005) FR; Maret (2008) FR; Kutovaya (2015) RU; Coronado Salas (2012) SP; Francescutti (2007) SP	QN-CG (GRADE): --- QN-DS (GRADE Adapted): --- QL (CERQual): Low MM, CS (as appropriate): Moderate
Activities	Perception of risk associates with many socio-demographic and geographic variables as well as past experiences. A perception of high risk is usually positively associated with preparedness actions; however, there are many instances of risk paradoxes.	Ardalan (2010); Ardalan (2013); Ashrose (2015); Muttarak (2013); Perko (2013); Perry (2008); Roder (2016); Shenhar (2015); Strawderman (2012); Terpstra (2011); Kurtovaya (2014) RU	QN-CG (GRADE): Moderate QN-DS (GRADE Adapted): Moderate QL (CERQual): --- MM, CS (as appropriate): Moderate to Low
Activities	Congruent messages (not simply repetitive use of same message) disseminated many times and through a myriad of media channels empower community individuals by enhancing knowledge and promoting preparedness/response actions. Targeting by attending to message framing for different audiences usually makes a difference on awareness, knowledge acquisition, and actions. Risk communication has a large impact on individual response actions, especially among prevention-focused people.	Chan (2007); Clerveaux (2010); Cretikos (2008); Glik (2014); Heath (2009); Jahangiri (2010); Paek (2010); Mei (2013); Roder (2008); Roess (2011); Shenhar (2015); Yen (2009); Al-Tuwairqi (2003) AR; Su (2008) CH; Affletranger (2003) FR; Baggio (2006) FR; Gaillard (2002) FR; Gaillard (2008) FR; Glatron (2009) FR; Heitz (2013) FR; Rode (2008) FR; Setbon (2009) FR; Vlnet (2005) FR; WHO (2004) FR; Durnev (2008) RU; Podkorytov (2014) RU	QN-CG (GRADE): Moderate QN-DS (GRADE Adapted): Moderate QL (CERQual): --- MM, CS (as appropriate): Moderate to Low

<sup>a</sup>English has no suffix. AR = Arabic. CH = Chinese. FR = French. RU = Russian. SP = Spanish.

<sup>b</sup>QN-CG (GRADE): high, moderate, low, very low; QN-DS (GRADE Adapted): high, moderate, low, very low; QL (CERQual): high, moderate, low, very low; MM, CS (as appropriate): high, moderate, low, very low. Only English language studies from Section 4.5 are considered.

**TABLE C.3** *Two Methodological Streams: QL, MM, CS*

Phenomenon of interest/outcome	Synthesized finding across two method streams (with country, type and phase of disaster, vulnerable population contexts)	Citations (first author) supporting synthesized finding across method stream <sup>a</sup>	Evaluation of certainty/ confidence <sup>b</sup>
Activities	Access to material resources and technologies impact infrastructure/capacity of communities-at-large for preparedness, knowledge and activities of individuals for preparedness and response, and innovation and learning from past events.	Bird (2012); Falconi (2012); Mei (2013); Serra (2011); Chahraoui (2003) FR	QN-CG (GRADE): --- QN-DS (GRADE Adapted): --- QL (CERQual): Moderate to Low MM, CS (as appropriate): Moderate

<sup>a</sup>English has no suffix. AR = Arabic. CH = Chinese. FR = French. RU = Russian. SP = Spanish.

<sup>b</sup>QN-CG (GRADE): high, moderate, low, very low; QN-DS (GRADE Adapted): high, moderate, low, very low; QL (CERQual): high, moderate, low, very low; MM, CS (as appropriate): high, moderate, low, very low. Only English language studies from Section 4.5 are considered.

## English Language Studies

- Ardalan, A., Naieni, K. H., Mahmoodi, M., Zanganeh, A.-M., Keshtkar, A.-A., Honarvar, M.-R., & Kabir, M. J. (2010). Flash flood preparedness in Golestan province of Iran: A community intervention trial. *American Journal of Disaster Medicine*, 5, 197–214. <https://doi.org/10.5055/ajdm.2010.0022>
- Ardalan, A., Mowafi, H., Ardakani, H. M., Abolhasanai, F., Zanganeh, A.-M., Safizadeh, H., . . . Zonoobi, V. (2013). Effectiveness of a primary health care program on urban and rural community disaster preparedness, Islamic Republic of Iran: A community intervention trial. *Disaster Medicine and Public Health Preparedness*, 7, 481–490. <https://doi.org/10.1017/dmp.2013.93>
- Ashrose, I. S., & Sasi, R. K. C. (2015). Awareness workshop as an effective tool and approach for education in disaster risk reduction: A case study from Tamil Nadu, India. *Sustainability*, 7, 8965–84. <https://doi.org/10.3390/su7078965>
- Bird, D., Ling, M., & Haynes, K. (2012). Flooding Facebook—the use of social media during the Queensland and Victorian floods. *Australian Journal of Emergency Management*, 27, 27–33. Retrieved from <https://knowledge.aidr.org.au/media/2499/ajem-27-01-09.pdf>
- Chan, S. S. C., So, W. K. W., Wong, D. C. N., Lee, A. C. K., & Tiwari, A. (2007). Improving older adults' knowledge and practice of preventive measures through a telephone health education during the SARS epidemic in Hong Kong: A pilot study. *International Journal of Nursing Studies*, 44, 1120–1127. <https://doi.org/10.1016/j.ijnurstu.2006.04.019>
- Clerveaux, V., Spence, B., & Katada, T. (2010). Promoting disaster awareness in multicultural societies: The DAG approach. *Disease Prevention and Management*, 19, 199–218. <https://doi.org/10.1108/09653561011038002>
- Cretikos, M., Eastwood, K., Dalton, C., Merritt, T., Tuyl, F., Winn, L., & Durrheim, D. (2008). Household disaster preparedness and information sources: Rapid cluster survey after a storm in New South Wales, Australia. *BMC Public Health*, 8, 195. <https://doi.org/10.1186/1471-2458-8-195>
- Eisenman, D. P., Glik, D., Gonzalez, L., Maranon, R., Zhou, Q., Tseng, C.-H., & Asch, S. M. (2009). Improving Latino disaster preparedness using social networks. *American Journal of Preventive Medicine*, 37, 512–517. <https://doi.org/10.1016/j.amepre.2009.07.022>
- Eisenman, D., Chandra, A., Fogleman, S., Magana, A., Hendricks, A., Wells,

- K., . . . Plough, A. (2014). The Los Angeles County community disaster resilience project—a community-level, public health initiative to build community disaster resilience. *International Journal of Environmental Research and Public Health*, 11, 8475–8490. <https://doi.org/10.3390/ijerph110808475>
- Falconi, M., Fahim, C., & O'Sullivan, T. (2012). Protecting and supporting high risk populations in pandemic: Drawing from experiences with influenza A (H1N1). *International Journal of Child Health and Human Development*, 5, 373–381. Retrieved from ProQuest database.
- Glik, D. C., Eisenman, D. P., Zhou, Q., Tseng, C.-H., & Asch, S. M. (2014). Using the Precaution Adoption Process model to describe a disaster preparedness intervention among low-income Latinos. *Health Education Research*, 29, 272–282. <https://doi.org/10.1093/her/cyt109>
- Heath, R. L., Lee, J., & Ni, L. (2009). Crisis and risk approaches to emergency management planning and communication: The role of similarity and sensitivity. *Journal of Public Relations Research*, 21, 123–142. <https://doi.org/10.1080/10627260802557415>
- Jahangiri, K., Izadkhah, Y. O., Montazeri, A., & Hosseini, M. (2010). People's perspectives and expectations on preparedness against earthquakes: Tehran case study. *Journal of Injury and Violence Research*, 2, 85–91. <https://doi.org/10.5249/jivr.v2i2.25>
- Kapucu, N. (2008). Collaborative emergency management: Better community organizing, better public preparedness and response. *Disasters*, 32, 239–232. <https://doi.org/10.1111/j.1467-7717.2008.01037.x>
- Karan, K., Aileen, L., & Elaine, P. Y. L. (2007). Emerging victorious against an outbreak: Integrated communication management of SARS in Singapore. *Journal of Creative Communication*, 2, 383–403. <https://doi.org/10.1177/097325860700200307>
- Linnell, M. (2014). Citizen response in crisis: Individual and collective efforts to enhance community resilience. *Human Technology*, 10, 68–94. <https://doi.org/10.17011/ht/urn.201411203311>
- Masuda, J. R., & Garvin, T. (2006). Place, culture, and the social amplification of risk. *Risk Analysis*, 26, 437–454. <https://doi.org/10.1111/j.1539-6924.2006.00749.x>
- McComas, K. A. (2003). Citizen satisfaction with public meetings used for risk communication. *Journal of Applied Communication Research*, 31, 164–184. <https://doi.org/10.1080/0090988032000064605>

- Mei, E. T. W., Lavigne, F., Picquout, A., de Belizal, E., Brunstein, D., Grancher, D., . . . Vidal, C. (2013). Lessons learned from the 2010 evacuations at Merapi volcano. *Journal of Volcanology and Geothermal Research*, 261, 348–365. <https://doi.org/10.1016/j.jvolgeores.2013.03.010>
- Mitchell, T., Haynes, K., Hall, N., Choong, W., & Oven, K. (2008). The roles of children and youth in communicating disaster risk. *Children, Youth, and Environments*, 18, 254–279. <https://www.jstor.org/stable/10.7721/chilyoutenvi.18.1.0254>
- Muttarak, R., & Pothisiri, W. (2013). The role of education on disaster preparedness: Case study of 2012 Indian Ocean earthquakes on Thailand's Andaman Coast. *Ecology and Society*, 18(4), 51. <https://doi.org/10.5751/ES-06101-180451>
- Nepal, V., Banerjee, D., Slentz, M., Perry, M., & Scott, D. (2010). Community-based participatory research in disaster preparedness among linguistically isolated populations: A public health perspective. *Journal of Empirical Research Ethics*, 5, 53–63. <http://www.jstor.org/stable/10.1525/jer.2010.5.4.53>
- Paek, H.-J., Hilyard, K., Freimuth, V., Barge, J. K., & Mindlin, M. (2010). Theory-based approaches to understanding public emergency preparedness: Implications for effective health and risk communication. *Journal of Health Communication*, 15, 428–444. <https://doi.org/10.1080/10810731003753083>
- Perko, T., van Gorp, B., Turcanu, C., Thijssen, P., & Carle, B. (2013). Communication in nuclear emergency preparedness: A closer look at information reception. *Risk Analysis*, 33, 1987–2001. <https://doi.org/10.1111/risa.12048>
- Perry, R. W., & Lindell, M. K. (2008). Volcanic risk perception and adjustment in a multi-hazard environment. *Journal of Volcanology and Geothermal Research*, 172, 170–178. <https://doi.org/10.1016/j.jvolgeores.2007.12.006>
- Prior, T., & Paton, D. (2008). Understanding the context: The value of community engagement in bushfire risk communication and education: Observations following the East Coast Tasmania bushfires of December 2006. *Australasian Journal of Disaster and Trauma Studies*, 2. Retrieved from <http://www.massey.ac.nz/~trauma/>
- Roder, G., Ruljigajig, T., Lin, C.-W., & Tarolli, P. (2016). Natural hazards knowledge and risk perception of Wujie indigenous community in Taiwan. *Natural Hazards*, 81, 641–662. <https://doi.org/10.1007/s11069-015-2100-4>
- Roess, A. A., Monroe, B. P., Kinzoni, E. A., Gallagher, S., Ibata, S. R., Badinga, N., . . . Reynolds, M. G. (2011). Assessing the effectiveness of a community



- intervention for Monkeypox prevention in the Congo Basin. *PLoS Neglected Tropical Disease*, 5, e1356. <https://doi.org/10.1371/journal.pntd.0001356>
- Serra, A., Tabara, J. D., & Chabay, I. (2011). *Assessing the role of vertical and horizontal communication in disaster risk reduction learning and planning: The case of the Spanish Tous dam-break, 1982*. Retrieved from the United Nations Office for Disaster Risk Reduction website: [http://www.unisdr.org/files/18197\\_204chabayetal.assessingtheroleofver.pdf](http://www.unisdr.org/files/18197_204chabayetal.assessingtheroleofver.pdf)
- Shenhar, G., Rozenfeld, M., Radomislensky, I., & Peleg, K. (2016). Comparison of two successive earthquake awareness campaigns in Israel: Improved methodology or a cumulative effect? *Disaster Medicine and Public Health Preparedness*, 10, 74–79. <https://doi.org/10.1017/dmp.2015.95>
- Strawderman, L., Salehi, A., Babski-Reeves, A., Thomson-Neaves, T., & Crosby, A. (2012). Reverse 911 as a complementary evacuation warning system. *Natural Hazards Review*, 13, 65–73. [https://doi.org/10.1061/\(ASCE\)NH.1527-6996.0000059](https://doi.org/10.1061/(ASCE)NH.1527-6996.0000059)
- Terpstra, T. (2011). Emotions, trust, perceived risk: Affective and cognitive routes to flood behavior. *Risk Analysis*, 31, 1658–1675. <https://doi.org/10.1111/j.1539-6924.2011.01616.x>
- Tuerk, P. W., Hall, B., Nagae, N., McCauley, J. L., Yoder, M., Rauch, S. A. M., . . . Dussich, J. (2013). Forty days after the great East Japan earthquake: Field research investigating community engagement and traumatic stress screening in a post-disaster community mental health training. *International Journal of Psychiatry in Medicine*, 45, 159–174. <http://doi.org/10.2190/PM.45.2.e>
- Winters, C. A., Kuntz, S. W., Weinert, C., & Black, B. (2014). A case study exploring research communication in a rural community experiencing an environmental disaster. *Applied Environmental Education and Communication*, 13, 213–226. <https://doi.org/10.1080/1533015X.2014.970718>
- Yen, M., Wu, T. J., Chiu, A. W., Wong, W., Wang, P., Chan, T., & King, C. (2009). Taipei's use of a multi-channel mass risk communication program to rapidly reverse an epidemic of highly communicable disease. *PLoS One*, 4(11), e7962. <https://doi.org/10.1371/journal.pone.0007962>

## Other UN Languages Studies\*

### Arabic

- السيد، هالة. (١٠٢). دور المجالس الشعبية المحلية في إدارة الأزمات والكوارث المجتمعية : دراسة مطبقة على المجلس الشعبي المحلي لحي شرق محافظة الاسكندرية. مجلة دراسات في الخدمة الاجتماعية والعلوم الإنسانية، ٥، ٧٥٢٢-٧٥٣٢.
- [Al-Sayed, H. (2010). The role of local councils in crisis and community disaster management: An application to the local people's assembly in East Alexandria. *Journal of Social Work Studies and Humanities*, 5, 2257-2320.]
- الشهري، نوح. (١٠٢). أزمة التعامل مع المقيمين غير الشرعيين دراسة حالة. رسالة الماجستير.
- [Al-Shahri, N. (2014). *Management of illegal aliens: Case study* (Unpublished master's thesis). Naif Arab University for Security Sciences.]
- الطويرقي، سامر. (٣٠٢). برنامج مقترح لتوعية المواطنين من مخاطر السيول. رسالة الماجستير، ١-٨.
- [Al-Tuwairqi, S. (2003). *A proposed program to educate citizens about the risk of floods* (Unpublished master's thesis). Naif Arab University of Security Sciences.]
- لطف الله، نادية. (١٠٢). فاعلية وحدة عه الأمراض البائية في ضئ المعايير القمية في تيمية المعارف ومهارات إدارة الأزمات الصحية لدي الطالب المعلم. دار المنظومة، ٦٦-٩١١.
- [LutfAllah, N. (2010). Effectiveness of the infectious diseases unit in the light of national standards in knowledge development knowledge and skills of health crisis management amongst students and teachers. *Dar Al Manduma*, 66-119.]
- عودة، عبد الله. (١٠٢). متطلبات بناء القدرات المؤسسية للجمعيات الأهلية لمواجهة كارثة السيول بأسوان: دراسة على جمعيات تنمية المجتمع بقرى أبو الريش. مجلة دراسات في الخدمة الاجتماعية والعلوم الإنسانية، ٦، مطبقة (٨٢)، ١٠٤-٩٦٩٣.
- [Ouda, A. (2010). Institutional requirements of community associations to manage the flood disaster in Aswan: An application to community development associations in the villages of Abu Rish. *Journal of Social Work Studies and Humanities*, 6, 3969-4010.]
- زهرزهران، هيام. (٦٠٢). دور الجمعيات الأهلية في التعامل مع المشكلات القومية في ضوء متطلبات المجتمع المعاصر دراسة مطبقة على جمعية الرعاية المتكاملة بعين حلوان ومشكلة انفلونزا الطيور. مجلة دراسات في الخدمة الاجتماعية والعلوم الإنسانية، ١٢، ٩٦٤-٠٠٥.

\* The sources in other UN languages were read in the original language by Wayne State University graduate students: Fatima A. Barakji, Javier B. Guzman-Barcenas, Juan Liu, Beth N. Fowler Mail, Anna Nagayko, and Jacob J. Nickell. They translated the reference into APA style format, thus in brackets, and the article content for the research team.

- [Zahran, H. (2006). Role of local associations in dealing with national problems in the light of the requirements of contemporary society: A study applied to the Integrated Care Society in Helwan during H5N1 crisis. *Journal of Social Work Studies and Humanities*, 21, 469–500.]

## Chinese

- 陆剑云, 李美霞, 冯晶. (2010). 风险沟通对甲型 H1N1 流感病例密切接触者心理状况的影响. *热带医学杂志*. 10(6), 735–737.
- [Lu, J., Li, M., & Feng, J. (2010). Examining the influence of risk communication to the psychological status of people in the A H1N1 Quarantine Center. *Medicine*, 10(6), 735–737.]
- 苏桂武, 马宗晋, 等. (2008). 汶川地震灾区民众认知与响应地震灾害的特点及其减灾宣教意义, 以四川省德阳市为例. *地震地质*. 30, 877–891.
- [Su, G., Ma, Z., et al. (2008). Examining the characteristics of people's response to and perception of Wenchuan earthquake: Case study of Deyang city in Sichuan Province. *Seismology and Geology*, 30, 877–891.]

## French

- Affletranger, B., & de Richemond, N. M. (2003). Gestion de l'alerte et de l'information lors des crues: conditions et limites d'une démarche participative locale. L'exemple des Deux-Sèvres. *Flux*, 1, 16–27.
- [Affletranger, B., & de Richemond, N. M. (2003). Management of warning and information during floods: Conditions and limitations of a local participatory approach. The example of Deux-Sèvres. *Flux*, 1, 16–27. <https://doi.org/10.3917/flux.051.0016>]
- Baggio, S., & Rouquette, M. L. (2006). La représentation sociale de l'inondation: influence croisée de la proximité au risque et de l'importance de l'enjeu. *Bulletin de psychologie*, 481, 103–117.
- [Baggio, S., & Rouquette, M. L. (2006). Social representation of flooding: How proximity influences risk and its importance. *Psychology Bulletin*, 481, 103–117. <https://doi.org/10.3917/bupsy.481.0103>]
- Bouzouki, S. A. O. (2006). L'auto organisation de la population en situation de crise. *Risques*, 66, 172–180.
- [Bouzouki, S. A. O. (2006). Self-organization of populations in times of crisis. *Risks*, 66, 172–180. Retrieved from <https://hal.laas.fr/UR2-HB/halshs-00350869v1>]

- Chahraoui, K., Laurent, A., Colbeau-Justin, L., Weiss, K., & de Vanssay, B. (2003). Stress psychologique des sinistrés des inondations de la Somme: une étude exploratoire. *L'Information Psychiatrique*, 79, 307–318.
- [Chahraoui, K., Laurent, A., Colbeau-Justin, L., Weiss, K., & de Vanssay, B. (2003, April). Psychological stress of those affected by floods in the Somme: An exploratory study. *Psychiatric Information*, 79, 307–318. Retrieved from [http://www.jle.com/fr/revues/ipe/sommaire.phtml?cle\\_parution=777](http://www.jle.com/fr/revues/ipe/sommaire.phtml?cle_parution=777)]
- D'Ercole, R. (2002). Forces et faiblesses de la gestion des risques au Japon: une réflexion à partir de la crise liée à l'éruption du volcan Usu (Hokkaidô) de 2000. *Annales de Géographie*, 111, 524–548.
- [D'Ercole, R. (2002). Forces and weaknesses of the risk management in Japan: A reflexion after the crisis provoked by the Usu, Hokkaidô eruption in 2000. *Annals of Geography*, 111, 524–548. Retrieved from <https://www.jstor.org/stable/23455976>]
- Duchêne, F., & Journal, C. M. (2004). L'expérience de la crue. *Annales de la recherche urbaine*, 95, 71–77.
- [Duchêne, F., & Journal, C. M. (2004). Experience of the flood. *Annals of Urban Research*, 95, 71–77.]
- Erlich, M., Sauvaget, P., & Taliercio, G. (2000). L'évolution des systèmes de prévision des crues et des inondations: de l'offre technique vers une offre de service au citoyen. Réflexions et perspectives. *La Houille Blanche*, 1, 64–72.
- [Erlich, M., Sauvaget, P., & Taliercio, G. (2000). The evolution of flood and flood forecasting systems: What technology can offer to citizens. Reflections and perspectives. *The White Coal*, 1, 64–72. <https://doi.org/10.1051/lhb/2000009>]
- Gaillard, J. C. (2002, September). Implications territoriales et ethnoculturelles d'une crise volcanique: le cas de l'éruption du Mont Pinatubo aux Philippines. *Annales de géographie*, 111, 574–591.
- [Gaillard, J. C. (2002). Territorial and ethno-cultural implications of a volcanic crisis: The Mount Pinatubo (Philippines) 1991 eruption. *Annals of Geography*, 111, 574–591. <https://doi.org/10.3406/geo.2002.21620>]
- Gaillard, J. C., Liamzon, C. C., & Maceda, E. A. (2008). Catastrophes dites «naturelles» et développement: réflexions sur l'origine des désastres aux Philippines. *Revue Tiers Monde*, 2, 371–390.
- [Gaillard, J. C., Liamzon, C. C., & Maceda, E. A. (2008). Catastrophes considered “natural” and development: Reflections on the origin of disasters

- in the Philippines. *Third World Review*, 2, 371–390. Retrieved from <http://www.jstor.org/stable/23593288>
- Glatron, S. (2009). *Représentations cognitives et spatiales des risques et des nuisances pour les citadins* (Unpublished doctoral dissertation). Université de Strasbourg.
- [Glatron, S. (2009). *Cognitive and spatial representations of risks and nuisances for city dwellers* (Unpublished doctoral dissertation). University of Strasbourg. Retrieved from <https://tel.archives-ouvertes.fr/tel-00565920>]
- Gondard-Delcroix, C., & Rousseau, S. (2004). Vulnérabilité et stratégies durables de gestion des risques: Une étude appliquée aux ménages ruraux de Madagascar. *Développement durable et territoires. Économie, géographie, politique, droit, sociologie*, 3.
- [Gondard-Delcroix, C., & Rousseau, S. (2004). Vulnerability and sustainable risk management strategies: Study of rural households in Madagascar. *Sustainable Territorial Development*, 3. <https://doi.org/10.4000/developpementdurable.114>]
- Heitz, C., & Glatron, S. (2013). *Outils d'information du public sur les risques majeurs: les cartes sont-elles un vecteur d'acculturation? Étude exploratoire de la perception de cartes de risque d'inondations par les individus exposés (Eurométropole de Strasbourg)*.
- [Heitz, C., & Glatron, S. (2013). *Informational public tools on major risks: Are the maps vector acculturation? Exploratory study of the perception of flood maps by individuals at risk (Eurometropole of Strasbourg)*. Retrieved from [https://www.sfer.asso.fr/source/jrss2015/jrss2015\\_heitz.pdf](https://www.sfer.asso.fr/source/jrss2015/jrss2015_heitz.pdf)]
- Royaume du Maroc, Ministère de l'Aménagement du Territoire, de l'Eau et de l'Environnement Département de l'Environnement. (2005). *Rapport national sur la prevention des desastres conference de Kobe-Hyogo*.
- [Kingdom of Morocco, Minister of Planning, Water and the Environment, Department of the Environment. (2005). *National report on the Kobe-Hyogo conference of disaster prevention*. Retrieved from <https://www.unisdr.org/2005/mdgs-drr/national-reports/Morocco-report.pdf>]
- Maret, I., & Cadoul, T. (2008, November). Résilience et reconstruction durable: que nous apprend La Nouvelle-Orléans? *Annales de géographie*, 117, 104–124.
- [Maret, I., & Cadoul, T. (2008). Resilience and sustainable reconstruction:

- What can New Orleans teach us? *Annals of Geography*, 117, 104–124. Retrieved from <http://www.jstor.org/stable/23457742>]
- Rode, S. (2008). La prévention du risque d'inondation, facteur de recomposition urbaine? *L'Information géographique*, 72(4), 6–26.
- [Rode, S. (2008). Prevention of the risk of flooding under urban restructuring? *Geographic Information*, 72(4), 6–26. Retrieved from <https://www.cairn.info/revue-l-information-geographique-2008-4-page-6.htm>]
- Setbon, M., & Raude, J. (2009). Le chikungunya à la Réunion: facteurs sociaux, environnementaux et comportementaux en situation épidémique. *Population*, 63, 555–583.
- [Setbon, M., & Raude, J. (2008). Chikungunya in Réunion: Social, environmental, and behavioural factors in an epidemic. *Population*, 63, 555–583. Retrieved from <http://www.jstor.org/stable/20451115>]
- Tamru, B. (2002, September). L'émergence du risque d'inondation à Addis-Abeba: pertinence d'une étude des dynamiques urbaines comme révélatrices d'un processus de vulnérabilisation. *Annales de géographie*, 111, 614–636.
- [Tamru, B. (2002). The rise of flood risk in Addis-Ababa: The relevance of the study of urban dynamics as an indicator of the vulnerability process. *Annals of Geography*, 111, 614–636. Retrieved from <http://www.jstor.org/stable/23455980>]
- Organisation mondiale de la Santé. (2004). Instauration d'un dialogue sur les risques dus aux champs électromagnétiques.
- [World Health Organization. (2004). *Establishment of a dialogue on risks from electromagnetic fields*. Geneva, Switzerland: Author.]
- United Nations Food and Agriculture Organization and World Health Organization. (2011). *FAO/WHO guide for the implementation of the principles and procedures of risk analysis in food safety emergencies*. Retrieved from [http://apps.who.int/iris/bitstream/handle/10665/78041/9789242502473\\_fre.pdf](http://apps.who.int/iris/bitstream/handle/10665/78041/9789242502473_fre.pdf)
- Vinet, F., & Meschin de Richemond, N. (2005). Territoires et acteurs du risque d'inondation torrentielle en France méditerranéenne. *Bulletin de l'Association de géographes français*, 82, 116–126.
- [Vinet, F., & Meschin de Richemond, N. (2005). Territories and actors of flash flood hazard in French Mediterranean area. *Bulletin of the Association of French Geographers*, 82, 116–126. Retrieved from <http://biblio.uqar.ca/archives/30376470part1.pdf>]

## Russian

- Дурнев, Р. А., & Скубак, Н. Ю. (2008). Информирование и оповещение населения: некоторые особенности восприятия информационных сообщений. *Технологии гражданской безопасности*, 5(4), 57–64.
- [Durnev, R. A., & Skubak, N. Y. (2008). Information and notification of population: Some peculiarities of information perception. *Civil Security Technologies*, 5(4), 57–64.]
- Габричидзе, Т. Г. (2013). Трагедия в Крымске: выводы и предложения по обеспечению безопасности. *Вектор науки ТГУ*, 3, 118–120.
- [Gabrichidze, T. G. (2013). Tragedy in Krymsk: Conclusions and suggestions on providing security. *TSU Vector of Science*, 3, 118–120.]
- Кутовая, С. В. (2014). Наводнение 2013 года. Социальное самочувствие эвакуированных жителей. Четвертые областные РАДДЕВСКИЕ ЧТЕНИЯ.
- [Kutovaya, S. V. (2014). *Flood 2013: Social well-being of the evacuated residents*. Paper presented at the 4th Regional Reddevkiy Readings Conference.]
- Подкорытов, Н. С. (2014). Информирование населения как один из способов предупреждения причинения вреда. *Проблемы науки*, 1–3.
- [Podkorytov, N. S. (2014). Informing population as a way to avoid harm. *Science Problems*, 2, 97–100. Retrieved from <https://3minut.ru/images/PDF/2015/2.pdf#page=97>]

## Spanish

- Coronado Salas, C., Diaz-Barriga, F., Moreno Sanchez, A., Carrizalez Yanez, L., Torres Nerio, R., Renteria Guzman, Y., & Cubillas Tejeda, A. (2012). La comunicación de riesgos como una herramienta para disminuir la exposición infantil a plomo y arsénico en la zona contaminada de Villa de la Paz-Matehuala, San Luis Potosí, México. *Rev. Int. Contam. Ambie.*, 28(2), 167–181.
- [Coronado Salas, C., Diaz-Barriga, F., Moreno Sanchez, A., Carrizalez Yanez, L., Torres Nerio, R., Renteria Guzman, Y., & Cubillas Tejeda, A. (2012). Risk communication as tool to decrease infant lead and arsenic exposure in the contaminated area of Villa De La Paz, San Luis Potosí, Mexico. *International Contamination and Environmental Journal*, 28(2), 167–181. Retrieved from [http://www.scielo.org.mx/scielo.php?script=sci\\_arttext&pid=S0188-49992012000200008](http://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0188-49992012000200008)]

- Francescutti, P. (2007). De las vacas locas a la gripe aviar: La comunicación del riesgo en España. In J. R. Gomez (Ed.), *El riesgo en la sociedad de la información* (pp. 41–59). Retrieved from [http://ruc.udc.es/dspace/bitstream/handle/2183/12807/CC-91\\_art\\_3.pdf](http://ruc.udc.es/dspace/bitstream/handle/2183/12807/CC-91_art_3.pdf)
- [Francescutti, P. (2007). From cow disease to SARS: Risk communication in Spain. In J. R. Gomez (Ed.), *Risk within information society* (pp. 41–59). Retrieved from <https://core.ac.uk/download/pdf/61911483.pdf>]

## Existing Reviews

- Gurabardhi, Z., Gutteling, J. M., & Kuttschreuter, M. (2005). An empirical analysis of communication flow, strategy and stakeholders' participation in the risk communication literature. *Journal of Risk Research*, 8, 499–511. <https://doi.org/10.1080/13669870500064192>
- Lettieri, E., Masella, C., & Radaelli, G. (2009). Disaster management: Findings from a systematic review. *Disaster Prevention and Management*, 18, 117–136. <https://doi.org/10.1108/09653560910953207>
- Levac, J., Toal-Sullivan, D., & O'Sullivan, T. L. (2012). Household emergency preparedness: A literature review. *Journal of Community Health*, 37, 725–733. <https://doi.org/10.1007/s10900-011-9488-x>
- McCaffrey, S. (2015). Community wildfire preparedness: A global state-of-the-knowledge summary of social science research. *Current Forestry Report*, 1, 81–90. <https://doi.org/10.1007/s40725-015-0015-7>
- Savoia, E., Lin, L., & Viswanath, K. (2013). Communications in public health emergency preparedness: A systematic review of the literature. *Biosecurity and Bioterrorism: Biodefense Strategy, Practice, and Science*, 11, 170–184. <https://doi.org/10.1089/bbsp.2013.0038>
- Schiavo, R., Leung, M. M., & Brown, M. (2014). Communicating risk and promoting disease mitigation measures in epidemics and emerging disease settings. *Pathogens and Global Health*, 108, 76–94. <https://doi.org/10.1179/2047773214Y.0000000127>
- Wachinger, G., Renn, O., Begg, C., & Kuhlicke, C. (2013). The risk perception paradox—Implications for governance and communication of natural hazards. *Risk Analysis*, 33, 1049–1063. <https://doi.org/10.1111/j.1539-6924.2012.01942.x>



## Other References

- Alonso-Coello, P., Schünemann, H. J., Moher, J., Brignardello-Petersen, R., Akl, E. A., Davoli, M., Treweek, S., Mustafa, R. A., . . . Oxman, A. D. (2016). GRADE Evidence to Decision (EtD) frameworks: A systematic and transparent approach to making well informed healthcare choices. 1: Introduction. *BMJ*, 353, i2016. <https://doi.org/10.1136/bmj.i2016>
- Barnett-Page, E., & Thomas, J. (2009). Methods for the synthesis of qualitative research: A critical review. *BMC Medical Research Methodology*, 9, 59. <https://doi.org/10.1186/1471-2288-9-59>
- GRADE Working Group. (2004). Grading quality of evidence and strength of recommendations. *BMJ*, 328, 1490–1494.
- Guyatt, G., Oxman, A. D., Akl, E. A., Kunz, R., Vist, G., Brozek, J., . . . Schunemann, H. J. (2011). GRADE guidelines: 1. Introduction-GRADE evidence profiles and summary of findings table. *Journal of Clinical Epidemiology*, 64, 383–394. <https://doi.org/10.1016/j.jclinepi.2010.04.026>
- Lewin, S., Glenton, C., Munthe-Kaas, H., Carlsen, B., Colvin, C. J., Gulmezoglu, M., . . . Rashidian, A. (2015). Using qualitative evidence in decision making for health and social interventions: An approach to assess confidence in findings from qualitative evidence syntheses (GRADE-CERQual). *PLOS Medicine*. <https://doi.org/10.1371/journal.pmed.1001895>
- Pope, C., Zieband, S., & Mays, N. (2000). Analysing qualitative data. *BMJ*, 320, 114–116.
- Tyndall, J. (2008). *How low can you go? Towards a hierarchy of grey literature*. Paper presented at Dreaming 08: Australian Library and Information Association Biennial Conference, Alice Springs, September. Retrieved from <http://hdl.handle.net/2328/3326>

## Acknowledgments

This project was funded by the World Health Organization, Department of Communications (contract PO 201393190, WHO registration 2015/586494-0, and contract PO 201428650, WHO registration 2016/601521-0).

**Julie M. Novak**, PhD, is an associate professor in the Department of Communication at Wayne State University. Her research focuses on sensemaking and co-constructions of experiences in applied intersections of health, risk, and crisis communication.

**Ashleigh M. Day** is a doctoral candidate in the Department of Communication at Wayne State University. She earned her master of arts degree in applied communication from Northern Arizona University. Her research interests center on crisis, risk, and health communication. In particular, she is interested in the ways that people receive, seek out, and process communication to facilitate decision-making and sense-making of their experience with crisis or risk.

**Pradeep Sopory**, PhD, conducts research on message design and effects, especially in the context of health communication. His two areas of research are (a) metaphor use in persuasive messages and (b) risk communication, particularly in the context of health-related attitudes, beliefs, and behaviors. He has been the principal investigator of several research grants investigating basic message effects processes in both laboratory and field settings.

**Lee Wilkins**, PhD, is a professor emerita at Wayne State University. Her research focuses on media coverage of hazards and disasters and media ethics. She is also a Curator's Distinguished Teaching Professor at the University of Missouri, School of Journalism and an emeritus professor at that institution.

**Donyale Padgett**, PhD, is a critical scholar concerned with the generative power of rhetoric in the public sphere, which has to do with how groups use persuasion and dialogue to gain influence. Much of her work is concerned with how people from traditionally marginalized groups relate to power in social structures, deal with oppression, and negotiate their identities within institutions.

**Stine Eckert**, PhD, is an assistant professor in the Department of Communication at Wayne State University. Her research focuses on the

intersection of social media, minorities, and gender and the democratic potential of social media and international comparative work. She is chair of the Feminist Scholarship Division of the International Communication Association and cofounder of Wikid GRRLs.

**Jane Noyes**, PhD, is professor of health and social care services research and child health at Bangor University, United Kingdom. She is interested in health services research and evidence synthesis, in particular in evidence synthesis methodology. She is lead convener of the Cochrane Qualitative and Implementation Methods Group, co-chair of the Cochrane Methods Executive, and member of the Cochrane Scientific Committee.

**Tomas Allen** is a librarian for over 15 years within the World Health Organization. Tomas's current responsibilities in the WHO Library include reference, in-depth searching, historical research, and training (both local and regional). Tomas is originally from Manitoba, Canada, and has a master's of library and information studies degree from McGill University (Montreal).

**Nyka Alexander** is a communications officer with WHO, where she manages the team that covers emergencies for the organization. She has been deployed to emergencies for over a decade, covering typhoons, earthquakes, and outbreaks from cholera to plague to Ebola. She is a former broadcast journalist and holds a bachelor's degree in physics and a master's degree in international affairs and journalism.

**Marsha Vanderford**, PhD, provides strategic communication support to national and international public agencies, including the U.S. CDC, the WHO, the FAO, the Task Force for Global Health, and the Warning Project. She serves as a temporary technical advisor to WHO related to risk communication aspects of the International Health Regulations. Dr. Vanderford served as director of communications at WHO (2016–2017) and in several leadership roles at the CDC (2000–2015), including associate director for communications, Center for Global Health, and director of the CDC's Emergency Risk Communication Branch.

**Gaya Gamhewage**, MD, is the manager of the Support for Response Unit of the Infectious Hazard Management Department of the WHO Health Emergencies Programme based in Geneva, Switzerland. Dr. Gamhewage has 17 years of experience at WHO working in a range of high-profile roles, mostly in humanitarian and epidemic and pandemic capacity building and response.

## ORCID

Julie M. Novak  <https://orcid.org/0000-0001-5536-6171>

## References

- Centers for Disease Control and Prevention. (2014). *CERC manual*. Retrieved from <https://emergency.cdc.gov/cerc/manual/index.asp>
- Centers for Disease Control and Prevention. (2018). *CERC manual*. Retrieved from <https://emergency.cdc.gov/cerc/manual/index.asp>
- Critical Appraisal Skills Programme. (2013). *CASP qualitative checklist*. Retrieved from <http://www.casp-uk.net/casp-tools-checklists>
- Dauids, E. L., & Roman, N. V. (2014). A systematic review of the relationship between parenting styles and children's physical activity. *African Journal for Physical, Health Education, Recreation, and Dance*, 20, 228–246. Retrieved from <https://hdl.handle.net/10520/EJC162511>
- Effective Practice and Organisation of Care. (2015). *Suggested risk of bias criteria for EPOC reviews*. Retrieved from <http://epoc.cochrane.org/epoc-specific-resources-review-authors>
- Higgins, J. P. T., & Green, S. (Eds.). (2011). *Cochrane handbook for systematic reviews of interventions* (Version 5.1.0, updated March 2011). Retrieved from <http://www.handbook.cochrane.org>
- Lettieri, E., Masella, C., & Radaelli, G. (2009). Disaster management: Findings from a systematic review. *Disaster Prevention and Management*, 18, 117–136. <https://doi.org/10.1108/09653560910953207>
- Levac, J., Toal-Sullivan, D., & O'Sullivan, T. L. (2012). Household emergency preparedness: A literature review. *Journal of Community Health*, 37, 725–733. <https://doi.org/10.1007/s10900-011-9488-x>
- McCaffrey, S. (2015). Community wildfire preparedness: A global state-of-the-

- knowledge summary of social science research. *Current Forestry Report*, 1, 81–90. <https://doi.org/10.1007/s40725-015-0015-7>
- Noyes, J., Booth, A., Lewin, S., Carlsen, B., Glenton, C., Munthe-Kaas, H., . . . Tucker, J. D. (2019). *Applying the GRADE-CERQual approach: Making a CERQual assessment of relevance of the data*. Unpublished manuscript.
- Pluye, P., Robert, E., Cargo, M., Bartlett, G., O’Cathain, A., Griffiths, F., . . . Rousseau, M. C. (2011). *Proposal: A mixed methods appraisal tool for systematic mixed studies reviews*. Retrieved from <http://mixedmethodsappraisaltoolpublic.pbworks.com>
- Shea, B. J., Grimshaw, J. M., Wells, G. A., Boers, M., Andersson, N., Hamel, C., . . . Bouter, L. M. (2007). Development of AMSTAR: A measurement tool to assess the methodological quality of systematic reviews. *BMC Medical Research Methodology*, 7(1), 10. <https://doi.org/10.1186/1471-2288-7-10>
- World Health Organization. (2018). *Communicating risk in public health emergencies: A WHO Guideline for Emergency Risk Communication (ERC) policy and practice*. Retrieved from <http://www.who.int/risk-communication/guidance/download/en/>



# The Effects of Community Size, Control Over Agenda, and Contextual Variables on Zika Virus Preparation of Public Information Officers at Local Public Health Departments

Elizabeth Johnson Avery 

Department of Communication, University of Tennessee, Knoxville, Tennessee, USA

## ABSTRACT

As Zika emerged as a major global health threat, public information officers (PIOs) at local public health departments across the United States prepared for outbreaks of the virus amid great uncertainty. Using the crisis and risk emergency communication (CERC) model to inform this study, PIOs ( $n = 226$ ) at public health departments were surveyed to assess how community size, perceived control over health agenda, and other considerations such as resources and federal influences affected their satisfaction with Zika preparedness in their departments. These contextual, indirect factors may moderate planning efforts for Zika and other health emergencies and thus should be considered in crisis management and planning models such as CERC.

**KEYWORDS:** Health communication; crisis communication; crisis management; CERC model; Zika virus

Just as Rio de Janeiro prepared to host the 2016 Olympic games, Zika virus was declared a national public health emergency in Brazil. Fear and uncertainty gripped the world as Zika prevalence grew across South America (Umlauf & Shin, 2016). By summer 2016, the World Health Organization (WHO) had declared Zika an international health emergency. Numerous travel advisories were issued, and pregnant or soon-to-be pregnant women were urged to avoid travel to more than 45 countries, mostly in the Caribbean and Latin America. The first locally transmitted Zika cases in the United States appeared in Florida

**CONTACT** Elizabeth Johnson Avery • E-mail: [ejavery@utk.edu](mailto:ejavery@utk.edu) • 476 Communication Building, University of Tennessee, Knoxville, TN 37996, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

in July, and the WHO estimated that millions would be affected by the end of 2016 (McNeil, Saint Louis, & St. Fleur, 2016).

Zika's largest threat was to pregnant women; this became evident as cases of microcephaly, a severe birth defect associated with compromised brain function, increased. Prevalence of Guillain-Barre syndrome also increased in Zika-infected areas (Centers for Disease Control [CDC], 2016b). Even areas without local transmission were at risk of cases resulting from residents traveling to infected areas and from sexual transmission. Zika virus was unfamiliar and mysterious to publics, inducing a higher level of uncertainty (Reynolds & Seeger, 2005). Villa (2016) noted that, with Zika, "just when the attention of the public is at the top, information about what is going on is usually still missing" (p. 7).

In sum, Zika forced public health officials across the world to manage a global health crisis with potentially devastating effects, especially on unborn children. In late summer 2016, as the first reports of cases in the United States emerged, a survey ( $n = 226$ ) of public information officers (PIOs) at health departments across the United States was conducted to reveal how they were preparing for Zika. Survey data collected during this stage, when the exact nature of the virus and the extent of infection were unrealized for most locales, provide unique insight into planning for health risks emerging as crises. Instead of a retrospective assessment of management, these "real-time" data illuminate the realities of PIOs managing myriad unknowns amid their planning. This study informs health crisis planning by focusing on situational moderators not directly related to the crisis situation itself but affecting PIOs' preparedness to manage Zika outbreaks in their communities, informing a more holistic understanding of crisis readiness and management.

As a comprehensive approach to managing public health emergencies, Reynolds and Seeger's (2005, 2014) crisis and emergency risk communication (CERC) model provides a useful framework for this analysis, especially to inform the preparation stage for major health threats. During health crises, the unique operating environments of crisis managers should be carefully considered when making management recommendations. Zika presented complex contingencies at many levels. As Seeger, Reynolds, and Sellnow (2009) noted, greater

organizational attention to the preparation and coordination phases of crisis management is needed.

The CERC model informs process-based learning from efforts in response to a multifaceted health crisis such as Zika. This study extends current planning considerations in the CERC model by identifying how community size and extent of control over local public health agendas affected PIOs' assessments of their Zika preparedness. Given its complexity and resulting public uncertainty, the case of Zika provides an important contextual framework for this analysis; however, the results also inform preparedness broadly for other health crisis management issues. Furthermore, different barriers to and considerations in PIOs' preparedness efforts are explored to inform a deeper understanding of crisis planning based both on the management process of the crisis itself and moderating factors surrounding it.

## **Literature Review**

The uncertain trajectory of Zika transmission combined with the threat from travelers returning from infected areas required health officials across the United States to manage an unknown risk emerging as a crisis. With its "process view" of crisis events, Reynolds and Seeger's (2005) CERC model provides a strong framework in which to study the Zika preparedness efforts of a national sample of PIOs at local public health departments who are central to the dissemination and flow of public health communication in their communities. White and Wingenbach (2013) defined PIOs as "communication professionals—often with prior training in journalism—working for nonprofit institutions or government agencies to provide the public and media journalists with information their employers consider crucial to the public good" (p. 123). As important boundary spanners between health experts and the media, PIOs at health departments disseminate often highly technical health information to media and other publics that must be accurately understood and shared (Ankney & Curtin, 2002). This research supplements and extends the utility of the CERC model by considering external influences on PIOs' planning that could also be incorporated into management recommendations in other stages of the model.



### **The CERC Model**

Crisis and risk communication are largely distinct areas of research and practice, but unique health crises require elements of each (Seeger et al., 2009). Crisis communication research focuses on image restoration and response following crisis, from the standpoint of the organization, whereas risk communication entails educating publics on risks and messages designed to change risky behaviors (Seeger et al., 2009). Reynolds and Seeger's (2005) CERC model is a "merged approach that can also be understood as a meta-strategy of crisis preparation and response that informs other strategies and tactics of communication about risks and crises" (Seeger et al., 2009, p. 494). Zika required a dynamic preparedness effort from PIOs as the nature and extent of the threat unfolded and vulnerable publics emerged. Thus preparation efforts, the primary focus of this research, were revised and adapted throughout the process, making Zika a unique context to examine preparedness and to inform planning for other health emergencies as well. The barriers and management considerations explored here are factors external to the crisis itself but very much affecting its management.

### **The Stages of CERC and the Influence of External Factors Thereon**

The five stages of the CERC model are precrisis, initial event, maintenance, resolution, and evaluation (Reynolds & Seeger, 2005). The stage of primary interest in this study, the precrisis stage, entails communication targeted to publics and the response community to allow monitoring of risk, public understanding of risk, preparing publics for a negative event, boosting self-efficacy, designing warning messages for a threat, creating alliances with outside partners, developing expert recommendations, and creating messages for later crisis stages.

Additional precrisis considerations investigated in this study are how community size, control over health agenda, and different barriers to crisis planning, such as strained resources, affect PIOs' evaluations of readiness for a major health crisis. These variables are not inherent in the crisis situation but instead affect the ability of the organization to manage it. Ruggiero and Vos (2015) identified resources, competences, and cooperation as critical considerations in crisis planning and crisis

communication, and they noted that training activities can improve each. Variables such as these may exert a moderating influence over each of the management objectives in the original CERC “working model” (Reynolds & Seeger, 2005, p. 52). For example, the size of the community and availability of department resources may influence the development of partnerships with external groups and render their management assistance more necessary.

Following the precrisis stage, the initial event stage entails risk messages, warnings, and preparation, as the goal of communication is uncertainty reduction, building self-efficacy, and offering reassurance. In the event stage, the focus narrows onto “reduction of crisis-related uncertainty” (Reynolds & Seeger, 2005, p. 52), a formidable challenge given PIOs responding to Zika were managing their own considerable uncertainties. As the situation moves into the maintenance stage, message strategy entails ongoing uncertainty reduction and building self-efficacy. Public health communicators must be aware of these stages, present in every crisis or disaster, to anticipate the unique informational needs of various publics, including the general public, the media, and stakeholders. The variables measured in this study supplement CERC by considering the operating environment of the crisis manager and the influence it exerts on management; these variables are most salient to the precrisis and crisis stages of management.

### **Effects of Community Size on Zika Preparedness**

Resources available to PIOs are one central external management consideration in this study. Major disparities exist between rural and urban populations regarding access to care, staffing, service availability, and financial resources (American Public Health Association, 2016). Resources and information are critical to preparation (Ruggiero & Vos, 2015; Seeger et al., 2009), yet sustaining the requisite resources and staff to communicate effectively is a particularly challenging aspect of public health event preparedness (Reynolds & Quinn, 2008). Similar to the challenges presented by pandemic influenza reviewed by Reynolds and Quinn, Zika presented PIOs with a prolonged crisis during which communication needs and response strategies changed based on the stage, presence, transmission, and prevalence of the virus.

Despite research and policy aiming to reduce health disparities in the United States, they remain a vexing problem (Thompson, Molina, Viswanath, Warnecke, & Prelip, 2016). More than 50 million underserved people in the United States live in rural and poor urban neighborhoods where health care providers and services are limited (U.S. Department of Health and Human Services [DHHS], 2016). In addition to the health disparities plaguing their populations, PIOs at health departments serving smaller rural areas lag in other areas behind those in larger, better-resourced departments. Finnegan and Viswanath (2008, p. 383) argued that “communication contributes to these circumstances and structural barriers of access and exposure are too frequently ignored or overlooked.”

### **Effects of Public Health Agenda Control on Zika Preparedness**

As a primary source of news for health journalists and through direct promotion, PIOs at health departments contribute greatly to the construction of the local public health agenda. Yet there is evidence of disparities in PIOs’ perceived control over their promoted agendas by geography (Avery, Lariscy, & Sohn, 2009). Health agendas are defined as “systematically structured and articulated sets of goals that guide medical research and training, public policies and spending, and public attention at national, state, and local levels” (Avery et al., 2009, p. 691). Avery and colleagues identified lower levels of perceived departmental control over their health agendas among rural health department PIOs compared to those serving larger populations. PIOs at departments in urban areas reported low levels of state and federal control but high levels of local control over their public health agendas. As evidence of further disparities based on community size, PIOs serving rural health areas reported lower social media adoption rates than those in urban and suburban areas (Avery et al., 2010).

Analyzing the relationship between PIOs’ perceived control over their health agendas and their satisfaction with Zika preparedness offers insight into whether and how autonomy in promoting a health agenda influences crisis planning in general. Health agendas can be locally sourced or mandated from a state or federal agency. Almost 30%

of states in the United States are operating with a centralized health structure in which a unit of the state health agency provides local health services (CDC, 2016a). This top-down structure may compromise local control in health promotion for the issues identified as most important in a particular community (Avery et al., 2009). In the CERC model, the preparation stage entails monitoring emerging risks and promoting general public understanding of *localized* risk levels (Reynolds & Seeger, 2014). Loss of autonomy in promoting the public health agenda and increasing centralization of public health may compromise PIOs' abilities to assess threat levels and develop targeted, localized message strategy. In the context of Zika, similar to other health crises, risk varied widely by geography, illustrating the critical nature of these local assessments.

Quinn (2008) noted that, especially for wide-scale threats, "public health educators engaging in CERC must recognize the risks inherent in disparities to exposure, susceptibility, and treatment and create messages that reflect these realities" (p. 198); local constituents need localized information. Also, as Avery and colleagues (2009) noted, PIOs' perceptions of control in promoting their local health agendas may be an important indicator of the overall well-being of the community public health department, reflected in better initiatives, job satisfaction, and accountability.

The extant body of health and crisis communication literature has pointed out disturbing disparities in the provision of health care and information based on community size. However, no research has directly assessed the impact of community size on preparations for a major health threat. Exploring this relationship may provide a basis for future research generating crisis management directives unique to and considerate of the size of the community the PIO serves. Furthermore, the centralization of public health departments resulting in less local-level control has been explored for its effects on provision of quality health care and information to publics. However, similar to community size, the direct effects of control over agenda in crisis preparedness have not been identified. To explore the influences of community size and perceived control over the public health agenda on satisfaction with Zika preparedness, the following research question and hypothesis are

posed, which may extend the utility of CERC to broader moderating considerations in the precrisis stage:

**RQ1:** What, if any, is the relationship between community size and satisfaction with Zika preparedness?

**H1:** Extent of control over the local public health agenda will positively predict satisfaction with preparedness efforts.

### **Considerations in and Barriers to Zika Preparedness**

In addition to examining how community size and control over agenda affect PIOs' satisfaction with their Zika preparedness, this study also considers the various situational barriers and considerations PIOs manage in emergency planning and how they impact planning satisfaction. Examining this relationship during management of the Zika crisis enhances the utility of crisis planning models such as CERC by identifying implications of barriers and unique operating environments on health crisis management. Avery and Graham (2016) argued that recommending a uniform crisis response posture for organizations regardless of external nuances of the situation is unreasonable. The CERC model comprises both process and content dimensions; the process is how those responding to a crisis or emergency evaluate it and create a response (Parmer et al., 2016). It follows that, in those evaluations, crisis managers must take their unique organizational operating environments into account. Zika provided an important contextual opportunity for analysis of that assumption given the uncertainty and complexities it presented to management.

The situational considerations assessed here affect, to some extent, management efforts in every aspect of CERC's precrisis stage. Crisis planning necessitates assessing the vulnerabilities facing the organization (Heath, 2004). Avery and Graham (2016) noted that "even the most tailored recommendations for crisis management are rendered somewhat useless if the organization is unable to implement them due to challenges such as limited budgets or inefficient partnerships, amidst the many other considerations" (p. 21). Their survey of PIOs at local government departments across the United States explored challenges to crisis management unique to the organization, such as

limited resources. Partnerships with outside agencies were especially important for PIOs in smaller departments with fewer resources to supplement their management efforts during public health threats (Avery & Graham, 2016). PIOs have reported major failures in their relationships with other health communication practitioners at the local, state, and federal levels (Avery et al., 2009). Yet, underscoring the importance of external partners, Berlin and Carlström (2015) have offered evidence that collaboration exercises with first responders and operational personnel contribute to their learning and the perceived usefulness of the exercises in actual emergency management work. They noted that “by allowing one of the organizations to act in a situation where the professional skills of an absent organization are required, collaborative elements are created” (Berlin & Carlström, 2015, p. 20). Thus organizations with strained resources will especially realize the value of improved external partnerships in crisis management, an important area to develop in research.

Consideration of resources available to crisis communicators is positioned here as a key area for extending crisis research in health, especially given that PIOs most commonly reported financial barriers to their provision of excellent health care and information in one survey (Avery et al., 2009) and that Ruggiero and Vos (2015) identified resources as critical to understanding crisis planning. Analyzing the importance of different factors affecting crisis planning and how they ultimately influence PIOs’ satisfaction with their preparedness offers unique insight to health risk and crisis research. The most influential factors to PIOs’ overall satisfaction with Zika preparedness present areas to target in crisis management training for PIOs, and the CERC model could be extended by incorporating recommendations for overcoming challenges. Given that resources and information are vital components of preparation (Seeger et al., 2009) as well as the challenge of maintaining the requisite staff and resources to communicate effectively during crisis (Reynolds & Quinn, 2008), it is important to use data collected during an emerging major health threat to reveal the experienced impact of resources on preparedness. Thus this study explores factors such as resources required, nature of the crisis, public concern, and advisories from state and federal agencies on Zika virus preparedness by asking the following:

**RQ2:** What, if any, underlying factors are there to the following variables affecting crisis management: time it requires, staff/personnel resources, budget resources, severity of crisis, perceived susceptibility of publics, proximity of crisis, public anxiety/fear, state office advisories, federal agency advisories, and citizen concern?

**RQ3:** How, if at all, does the importance of these factors (RQ2) influence PIOs' levels of satisfaction with their Zika virus preparedness?

## Method

### Data Collection

Upon institutional review board (IRB) approval, an online survey using Qualtrics was created for data collection. First, the survey was pilot tested ( $n = 15$ ) with scholars in the field and members of the target population (i.e., PIOs working at local public health departments, who were excluded from the final survey). Participants were first screened to ensure that they performed communication functions in their public health departments.

An e-mail soliciting participation was sent to 837 e-mail addresses of PIOs obtained by searching local public health department web pages and by calling offices to obtain e-mail addresses of their PIOs. Responses were received from 255 participants for a response rate of 30.5%. Of the 255 who started the e-mail survey, 4 did not give their consent, and 25 participants were omitted, as they did not perform communication functions for their health departments, leaving 226 valid respondents. Of those 226, 18 were partially completed. As compensation for their participation, following IRB-approved procedure, participants were directed to a separate survey not connected to their answers where they could enter their contact information to receive an aggregate report of the data and enter into a drawing to win one of two Apple watches. Finally, the data were cleaned following Morrow and Skolits's (2014) process.

### Measures

**Satisfaction with Zika preparedness.** Two items measured PIOs' satisfaction with their Zika virus preparedness (Cronbach's  $\alpha = .80$ ):

“My department has allocated sufficient resources toward preparing for a Zika virus outbreak in my community” and “I believe my health department is prepared to safeguard my community if there is a Zika virus outbreak in it.” Participants indicated their levels of agreement on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

**Control over health agendas.** Two items, based on measures from Avery and colleagues’ (2009) study, were used to measure the extent of control PIOs felt over their local public health agendas (Cronbach’s  $\alpha = .79$ ): “Our local office sets the public health agenda for this community” and “My department has control over the public health issues that are on our local public health agenda.” Participants indicated their levels of agreement on a 5-point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*).

**Considerations in crisis planning.** Prior research with PIOs (see Avery & Graham, 2016) used open, in-depth interview questions to generate a list of considerations that affected their crisis management. These items were expanded and used to investigate the extent to which the considerations and, in some cases, barriers to crisis planning influenced satisfaction with Zika preparedness. Participants indicated the level of importance on a 5-point scale ranging from 1 (*not at all important*) to 5 (*very important*) of the following considerations in their health crisis planning: time it requires, staff/personnel resources, budget resources, severity of crisis, perceived susceptibility of publics, proximity of crisis, public anxiety/fear, state office advisories, federal agency advisories, and citizen concern.

**Community size.** PIOs were also asked to classify the locality of the area served by their departments by size in number of inhabitants. These responses were collapsed into six population categories: (a) 9,999 or fewer, (b) 10,000–19,999, (c) 20,000–49,999, (d) 50,000–99,999, (e) 100,000–499,999, and (f) 500,000 or more.

## Results

### Sample Profile

Among respondents, 74% ( $n = 147$ ) reported their gender as female, 25% as male ( $n = 49$ ), and 1% ( $n = 2$ ) as “other.” Ages ranged from 22 to



73 years, with the average age of 48 years ( $SD = 11$ ). There were respondents from 40 U.S. states, representing every major geographic region. Results for the six-category variable of community size were as follows: 9,999 or fewer ( $n = 12$ , 5.9%); 10,000–19,999 ( $n = 10$ , 4.9%); 20,000–49,999 ( $n = 28$ , 13.7%); 50,000–99,999 ( $n = 34$ , 16.7%); 100,000–499,999 ( $n = 66$ , 32.4%); 500,000 or more ( $n = 54$ , 26.5%). For education, 3% of PIOs ( $n = 6$ ) had some college but no degree, 2% ( $n = 4$ ) had an associate's degree, 47.6% ( $n = 99$ ) had a bachelor's degree, 41.7% ( $n = 83$ ) had a master's degree, 3% ( $n = 6$ ) had a doctorate, and 0.5% ( $n = 1$ ) had a professional degree.

### **Community Size and Zika Preparedness**

To answer RQ1, analysis of variance (ANOVA) was conducted to reveal group differences in PIOs' satisfaction with their preparedness for Zika based on the independent variable of community size: (a) 9,999 or fewer, (b) 10,000–19,999, (c) 20,000–49,999, (d) 50,000–99,999, (e) 100,000–499,999, or (f) 500,000 or more. Levine's test was not significant,  $p = .42$ , indicating that the assumption of equality of variances was not rejected. Main effects revealed that preparedness was significantly different among PIOs serving different community sizes,  $F(5, 202) = 8.21$ ,  $p < .001$ . Bonferroni's post hoc tests were conducted to reveal which groups significantly differed. Category 6 ( $M = 3.82$ ), Category 5 ( $M = 3.39$ ), and Category 4 ( $M = 3.03$ ) each had significantly higher means than Category 3 ( $M = 2.61$ ).

### **Control Over Local Public Health Agenda and Zika Preparedness**

To test H1, standard regression was conducted to determine whether PIOs' control over their local public health agendas significantly and positively predicted satisfaction with their preparedness for Zika. Tolerance for the IV was assessed and was greater than .1, so the model summary, ANOVA table, and coefficients table were consulted. Regression results indicate that control over local public health agendas significantly predicted satisfaction with preparedness,  $R^2 = .029$ ,  $F(1, 204) = 6.13$ ,  $p < .05$ . Table 1 presents model coefficients. H1 was supported.

**TABLE 1** *Regression Coefficients for Independent Variables*

IV	B	$\beta$	T	Bivariate <i>r</i>	Partial <i>r</i>	<i>p</i>
Population (RQ1)*	0.19	0.31	4.6	0.31	0.31	0.00
Control (RQ2)*	0.20	0.17	2.48	0.17	0.17	0.01
Threat (RQ3)*	0.08	0.16	1.98	0.14	0.14	0.05
Resources (RQ3)*	-0.20	-0.17	-2.32	-0.17	-0.17	0.02
Advisories (RQ3)	0.08	-0.08	-1.02	-0.08	-0.07	0.31

\*Statistically significant independent variable.

### Underlying Structure in Considerations for PIOs in Crisis Planning

Factor analysis was conducted to examine RQ2 and determine what, if any, underlying structure there was to a wide range of barriers to and considerations in PIOs' crisis planning for measures of the following nine variables: time it requires ( $M = 3.39$ ), staff/personnel resources ( $M = 4.32$ ), budget resources ( $M = 4.07$ ), severity of crisis ( $M = 4.65$ ), perceived susceptibility of publics ( $M = 4.21$ ), proximity of crisis ( $M = 4.32$ ), public anxiety/fear ( $M = 4.3$ ), state office advisories ( $M = 3.86$ ), federal agency advisories ( $M = 3.72$ ), and citizen concern ( $M = 4.27$ ). First, factorability was assessed using the Kaiser–Meyer–Olkin (KMO) index and Bartlett's test of sphericity. The KMO was .735, and Bartlett's test was significant,  $p < .001$ , indicating the suitability of factor analysis. Initial analyses revealed that citizen concern and severity of crisis (communalities falling below the .6 cutoff, at .428 and .556, respectively) failed to load on any component or contribute meaningfully to the overall solution and so were excluded from the subsequent analysis (Mertler & Vannatta, 2005).

Principal components analysis with varimax rotation was conducted, revealing a three-factor solution that explained 72% of the total variance. The variance accounted for by each of Factors 1, 2, and 3 was 26%, 24%, and 22%, respectively. Eigenvalues for each component ranged from 1.2 to 2.8, satisfying that criterion ( $>1.0$ ). Component 1 comprised three items, all with positive factor loadings: time it requires (.850), staff/

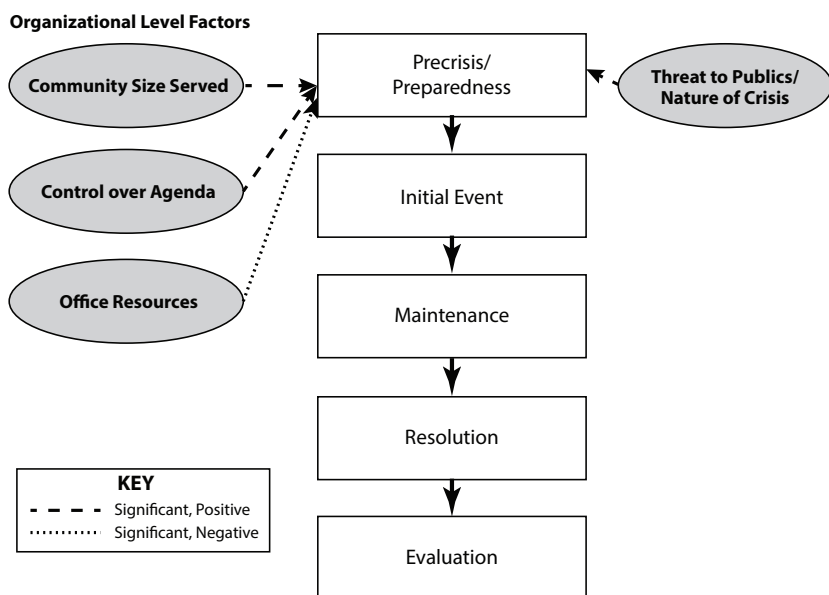
personnel resources (.841), and budget resources (.772). Component 1 was named “Office Resources.” Factor 2 comprised three items with positive loadings: public anxiety/fear (.845), proximity of crisis (.808), and susceptibility of publics (.682); it was labeled “Public Threat.” The final component comprised state (.894) and federal (.894) advisories. This component was labeled “Agency Advisories.”

### **Factors Affecting Planning Considerations and Zika Preparedness**

To answer RQ3, the three factors were used in a linear regression conducted to explore relationships between crisis planning and satisfaction with Zika preparedness. First, tolerance for each IV was assessed and was greater than .1, so the model summary, ANOVA table, and coefficients table were consulted. Regression results indicate that the overall model significantly predicted satisfaction with Zika preparedness,  $R^2 = .041$ ,  $F(3,184) = 2.63$ ,  $p < .05$ . The regression coefficients of public threat and office resources were significant predictors in the overall model; state and federal advisories were not. See Table 1 for model coefficients.

## **Discussion**

Zika was a mysterious threat to publics and thus highly uncertainty inducing. A primary goal in the preparation stage of the CERC model is messaging to reduce uncertainty (Reynolds & Seeger, 2005, 2014), and efforts to inform that goal while considering moderating situational variables that PIOs face are needed. Survey data from PIOs across the United States as they were preparing for Zika in their communities offer a snapshot of real-time risk management and crisis planning, enhancing the validity and value of these results in a way that retrospective reports and assessments of preparedness do not allow. These results extend the utility of the CERC model by considering organizational factors affecting both content and process dimensions of health emergency management using the unique case of Zika. These variables are examined here for their effects on preparedness, but they will likely impact in turn subsequent stages of crisis management. These results



**FIGURE 1** CERC model with contextual variables as significant predictors of preparedness.

inform efforts to tailor and adapt best practices to accommodate the various internal and external challenges PIOs face.

Figure 1 presents an expanded CERC model that includes the moderating variables explored in this study external to the crisis situation itself but very much affecting its management. Organizational-level factors such as the size of the community the PIO serves, the PIO's control over the local health agenda, and resources (i.e., time, money, and staff) have been added to the model as important predis/preparedness considerations. These factors are internal yet affect how PIOs prepare for crisis. Externally, characteristics of the threat itself have been added to the model as important factors affecting preparedness. Nature of the crisis variables include public anxiety/fear surrounding the crisis, the proximity of crisis, and susceptibility of the PIOs' publics to the threat. Each of these novel considerations is discussed in turn.

Troublesome disparities in PIOs' satisfaction with their planning were present in both situational and departmental factors. Regarding community size and Zika planning, practitioners serving the largest

areas (500,000 or more) reported the highest overall satisfaction with their Zika preparedness. PIOs serving smaller community sizes with populations between 50,000 and 99,999 reported the lowest level of satisfaction, and that level was significantly lower than it was for the three largest size categories. This finding merits further examination, as the practitioners serving mid-sized towns fared the worst, and all three of the smallest categories had lower mean satisfaction than the three largest categories. Perhaps initiatives to assist rural areas, such as the DHHS's (2001) Rural Task Force, have enabled the smallest-sized towns to fare slightly better than their more "overlooked" medium-sized town counterparts in crisis management. Overall, there is much room for improvement for PIOs serving both middle- and smaller-sized communities through enhanced CERC-based training efforts and assistance sensitive to their unique needs and operating environments. Thompson and colleagues (2016) noted that "if health disparities are to be reduced or eliminated, the playing field must be leveled" (p. 1427). These results indicate the need for heightened resources and assistance with preparedness in these communities.

Although the reasons for these differences are beyond the scope of this study, it offers disturbing evidence of additional disparities between rural and urban populations in crisis preparedness beyond those previously identified regarding access to care, staffing, service availability, and financial resources (American Public Health Association [APHA], 2016). Services and resources are generally more abundant for departments serving larger areas (APHA, 2016), and, in this case, even perceived preparedness for a major health threat lagged in smaller areas. Given the importance of adequate resources in preparedness (Ruggiero & Vos, 2015; Seeger et al., 2009), it is not surprising that practitioners in small, often understaffed and underfunded departments lag behind their counterparts at larger departments in planning. PIOs with smaller staffs have less assistance with both health education and crisis management functions, likely resulting in decreased available time to allocate to preparedness. The presence documented here of a possibly overlooked "middle" and the implications of these gaps on public safety demand more scrutiny to identify causation. CERC and other management models can be extended with targeted

recommendations for managing resource deficits in crisis planning.

Furthermore, PIOs' perceived control over their local public health agendas significantly and positively influenced their assessments of Zika planning: Those who felt more control over promoting the health issues they deemed important in their communities were also more satisfied with their preparedness. It is not surprising that those with more perceived autonomy in their routine health interventions would also be more satisfied with their planning for a specific health threat in their communities. However, this finding is troublesome given that 14 states are currently operating with a centralized health structure (CDC, 2016a). In centralized states, local services are provided by the state agency instead of by autonomous, independent health departments primarily working at the local level with state coordination. The provision of *localized* risk assessments to communities—especially during wide-scale threats like Zika—is central to CERC-based public health education (Quinn, 2008). Centralization compromises local-level control, which likely compromises PIOs' abilities to promote the issues they perceive as most pressing in their communities, those both routine *and* crisis in nature. During the Zika crisis, the extent of threat to publics varied extensively by location in the United States, even within states (such as Florida, where outbreaks were only in the southern portions). The case of Zika thus illustrates the importance of specifically tailored, localized information.

The effects of agenda control on risk and crisis management have not been adequately explored. Deficits may be due to structural and bureaucratic mechanisms or more to local situational considerations. Perhaps strained resources alone compromise control if PIOs do not have the time, staff, or money to promote the agendas they desire. Especially when considered along with the disparities revealed here regarding community size and preparedness satisfaction, the fact that Avery and colleagues (2009) offered evidence of less perceived control among PIOs in rural than urban public health departments is troublesome. This barrier could widen the gap between services availed by smaller, rural departments. Furthermore, CERC-based public health education entails providing localized risk assessments to communities, especially during wide-scale threats like Zika (Quinn, 2008). It follows that PIOs

with compromised control over promotion of their *local* public health agendas are also less satisfied with their levels of preparedness overall. If control is also an important indicator of overall health promotion, job satisfaction, and departmental accountability for PIOs (Avery et al., 2009), these relationships demand more causal probing.

Based on qualitative data from experts' evaluations of terrorism crisis management, Ruggiero and Vos (2015) identified resources as a critical area of consideration before and during the crisis. The quantitative data collected in this study support and extend that important contention and position it within the CERC model as a pressing area of development. Office resources, threat levels to publics, and agency advisories emerged as three components underlying PIOs' considerations in crisis planning. Threat to publics and resources required to manage a health crisis significantly predicted satisfaction with Zika preparedness in the regression model. Resources required negatively predicted preparedness satisfaction, while threat positively predicted satisfaction with preparedness. PIOs were more satisfied with their Zika preparedness as perceived importance of anxiety/fear levels of publics, the proximity of the crisis, and the susceptibility of publics in crisis planning increased.

This finding was positive in that PIOs were increasingly satisfied with their planning efforts with higher perceived threat levels; they were responding to the challenge in a satisfying way. More bleak is the significant negative relationship between resources (including time, money, and staff) and Zika preparedness: As importance of those considerations in crisis planning increased, satisfaction decreased. PIOs for whom resources were important, likely compromising their crisis planning efforts, were not as satisfied with their Zika preparedness. Again, research-based direction for accommodating resource barriers in crisis management is needed. CERC provides a very useful health crisis management model that can be expanded to include accommodating directions for resource and other structural obstacles PIOs face to enhance its utility. Although it is beyond the scope of this study to make specific recommendations in the CERC model on accommodating strained resources, precrisis steps within CERC, such as forming alliances and cooperating with other organizations, may be expanded

to assist underresourced PIOs. Partnerships with external organizations may yield critical assistance for PIOs at small departments managing crisis. Steps for establishing connections to supplement strained crisis management areas within the department and having strong partnerships in place precrisis may be useful extensions of CERC.

### **Limitations and Future Research**

Several of the limitations of this research are inherent to any survey research. These results do not enable causal attributions for *why* some of these results are the case. Also, the overall explained variance for several of the regression equations was quite low. For the incredibly complex processes involved in the dependent variables, however, this is to be expected. The goal was less to develop overall predictive models and more to understand if and how certain considerations factored into Zika preparation to provide direction for future research. Another limitation is that this study was based on self-reported data.

Overall, this research investigates PIOs' planning for a major public health crisis, Zika virus, that was shrouded in unknowns by collecting data in real-time as PIOs at local health departments across the United States prepared for crisis. Future research needs to employ a co-orientational approach to identify discrepancies between PIOs' and their publics' understandings and evaluations of crisis preparation and response. The disparity in planning satisfaction demonstrated by PIOs serving smaller areas reveals a pressing area for intervention. Given that extent of perceived control over local public health agendas significantly influenced satisfaction with Zika planning and that almost one-third of states are going to a more centralized model (CDC, 2016a), the effects of centralization and how it compromises control and thus health crisis preparedness demand more scholarly attention.

### **Conclusion**

This research adopts and extends the CERC model with process and content dimension considerations that affect every stage of risk and crisis management for PIOs at local health departments through insight provided by their preparation for a global health threat. Overall,



PIOs serving larger communities were more satisfied with Zika preparedness, and their satisfaction with preparedness increased as their perceived control over their health agendas increased. The threat to publics and office resources were significant predictors of satisfaction with preparedness. Taken together, these results present unique and important considerations for understanding preparedness for major health crises and the opportunity to use research-based recommendations to improve PIOs' crisis preparation, particularly among PIOs at smaller departments and with more strained resources.

**Elizabeth Johnson Avery**, PhD, is a professor of public relations and was codirector of the Risk, Health, and Crisis Communication Organized Research Unit at the University of Tennessee from 2009 to 2013. Avery is currently working with funding from the U.S. Department of Health and Human Services to address the opioid crisis in rural Appalachia. Prior to joining the faculty at the University of Tennessee, Avery completed a postdoctoral assistantship on a \$3.5 million CDC grant, served as campaign manager for a mayoral candidate, and was the environmental education coordinator at the Athens-Clarke County Recycling Division for several years.

## ORCID

Elizabeth Johnson Avery  <https://orcid.org/0000-0002-2565-3521>

## References

- American Public Health Association. (2016). *Rural health goals: Guaranteeing a future*. Retrieved from <http://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/30/10/36/rural-health-goals-guaranteeing-a-future>
- Ankney, R. N., & Curtin, P. A. (2002). Delineating (and delimiting) the boundary spanning role of the medical public information officer. *Public Relations Review*, 28, 229–241. [https://doi.org/10.1016/S0363-8111\(02\)00129-7](https://doi.org/10.1016/S0363-8111(02)00129-7)
- Avery, E. J., & Graham, M. (2016). Developing an integrated crisis con-

- text approach for crisis management. *Public Relations Journal*, 10, 1–21.
- Avery, E. J., Lariscy, R. W., & Sohn, Y. (2009). Public information officers' and journalists' perceived barriers to providing quality health information. *Health Communication*, 24, 327–336. <https://doi.org/10.1080/10410230902889365>
- Avery, E., Lariscy, R., Amador, E., Ickowitz, T., Primm, C., & Taylor, A. (2010). Diffusion of social media among public relations practitioners in health departments across various community population sizes. *Journal of Public Relations Research*, 22, 336–358. <https://doi.org/10.1080/10627261003614427>
- Berlin, J. M., & Carlström, E. D. (2015). Collaboration exercises: What do they contribute? *Journal of Contingencies and Crisis Management*, 23, 11–23. <https://doi.org/10.1111/1468-5973.12064>
- Centers for Disease Control and Prevention. (2016a). *State health departments governance details*. Retrieved from <https://www.cdc.gov/stltpublichealth/docs/sitesgovernance/public-health-governance-details.pdf>
- Centers for Disease Control and Prevention. (2016b). *Top 10 Zika response planning tips: Brief information for state, tribal, local, and territorial health officials*. Retrieved from <http://www.cdc.gov/zika/public-health-partners/tips.html>
- Finnegan, J. R., & Viswanath, K. (2008). Communication theory and health behavior change. In K. Glanz, F. Lewis, & B. Rimer (Eds.), *Health behavior and health education: Theory, research and practice* (pp. 361–388). San Francisco, CA: Jossey-Bass.
- Heath, R. L. (2004). Crisis preparation: Planning for the inevitable. In R. Heath & D. Miller (Eds.), *Responding to crisis: A rhetorical approach to crisis communication* (pp. 1–17). Hillsdale, NJ: Erlbaum.
- McNeil, D., Saint Louis, C., & St. Fleur, N. (2016, July 29). Short answers to hard questions about Zika virus. *New York Times*. Retrieved from <http://www.nytimes.com/interactive/2016/health/what-is-zika-virus.html>
- Mertler, C. A., & Vannatta, R. A. (2005). *Advanced and multivariate statistical methods*. Glendale, CA: Pyrczak.
- Morrow, J. A., & Skolits, G. (2014, November). *The twelve steps of data cleaning: Strategies for dealing with dirty data*. Workshop presented at the annual meeting of the American Evaluation Association, Denver, CO.
- Parmer, J., Baur, C., Eroglu, D., Lubell, K., Prue, C., Reynolds, B., & Weaver, J.

- (2016). Crisis and emergency risk messaging in mass media news stories: Is the public getting the information they need to protect their health? *Health Communication*, 31, 1215–1222. <https://doi.org/10.1080/10410236.2015.1049728>
- Quinn, S. C. (2008). Crisis and emergency risk communication in a pandemic: A model for building capacity and resilience of minority communities. *Health Promotion Practice*, 9(Suppl. 4), 18s–25s. <https://doi.org/10.1177/1524839908324022>
- Reynolds, B., & Quinn, S. C. (2008). Effective communication during an influenza pandemic: The value of using a crisis and emergency risk communication framework. *Health Promotion Practice*, 9(Suppl. 4), 13s–17s. <https://doi.org/10.1177/1524839908325267>
- Reynolds, B., & Seeger, M. W. (2005). Crisis and emergency risk communication as an integrative model. *Journal of Health Communication*, 10, 43–55. <https://doi.org/10.1080/10810730590904571>
- Reynolds, B., & Seeger, M. W. (2014). *Crisis and emergency risk communication* (2014 ed.). Retrieved from <https://stacks.cdc.gov/view/cdc/25531>.
- Ruggiero, A., & Vos, M. (2015). Communication challenges in CBRN terrorism crises: Expert perceptions. *Journal of Contingencies and Crisis Management*, 23, 138–148. <https://doi.org/10.1111/1468-5973.12065>
- Seeger, M. W., Reynolds, B., & Sellnow, T. L. (2009). Crisis and emergency risk communication in health contexts: Applying the CDC model to pandemic influenza. In R. L. Heath & H. D. O'Hair (Eds.), *Handbook of risk and crisis communication* (pp. 493–506). New York, NY: Routledge.
- Thompson, B., Molina, Y., Viswanath, K., Warnecke, R., & Prelep, M. L. (2016). Strategies to empower communities to reduce health disparities. *Health Affairs*, 35, 1424–1428. <https://doi.org/10.1377/hlthaff.2015.1364>
- Umlauf, T., & Shin, Y. (2016). How big a threat will Zika be at the Olympics. *Wall Street Journal*. Retrieved from <http://graphics.wsj.com/threat-of-zika-at-the-rio-olympics/>
- U.S. Department of Health and Human Services. (2001). *HHS issues report on community health in rural, urban areas*. Retrieved from <http://www.hhs.gov/news/press/2001pres/20010910.html>
- U.S. Department of Health and Human Services. (2016). *Health Resources and Services Administration*. Retrieved from <http://www.hrsa.gov/about/budget/budgetjustification2016.pdf>

- Villa, R. (2016). Zika, or the burden of uncertainty. *La Clinica Terapeutica*, 167, 7–9. <https://doi.org/10.7417/CT.2016.1907>
- White, J. M., & Wingenbach, G. (2013). Potential barriers to mass media coverage of health issues: Differences between public information officers and journalists regarding beliefs central to professional behaviors. *Journal of Public Relations Research*, 25, 123–140. <https://doi.org/10.1080/1062726X.2013.758582>





# From Hoax as Crisis to Crisis as Hoax: Fake News and Information Disorder as Disruptions to the Discourse of Renewal

Timothy L. Sellnow , Adam Parrish, and Lauren Semenas

Nicholson School of Communication and Media, University of Central Florida,  
Orlando, Florida, USA

## ABSTRACT

Hoaxes have long been a reputational threat to organizations. For example, false claims that syringes had been found in bottles of Pepsi-Cola products, that a portion of a finger had been found in Wendy's chili, and that Domino's employees had intentionally served contaminated food to customers have topped the media's agenda. More recently, the hoax phenomenon has been tactically reversed. Heavily trafficked Internet sites and controversial television personalities frequently argue that well-documented crises themselves are hoaxes. The potential for claims of crisis as hoax to disrupt the discourse of crisis renewal is examined through an analysis of three cases. We argue that overcoming such disruptions requires corporate social responsibility, a focus on the issues rather than the hoaxers, and continued efforts to improve media literacy for all audiences.

**KEYWORDS:** Crisis communication; risk communication; hoax; disinformation; fake news; crisis actor

False claims insisting that syringes had been found in bottles of Pepsi-Cola products (Weiner, 2006), that a portion of a finger had been found in Wendy's chili (Burbank, 2006), and that Domino's employees had intentionally served contaminated food to customers (Clifford, 2009) are examples of recent hoaxes creating reputational crises. All of these cases demanded an immediate, highly visible response. Previous research has broadly defined hoaxes as false claims made deliberately to appear as true (Kumar, West, & Leskovec, 2016). In the past, these hoaxes have focused mainly on attacking the reputation of organizations and government agencies (Veil, Sellnow, & Petrun, 2012). Although false, hoaxes that draw attention from stakeholders, such as consumers,

**CONTACT** Timothy L. Sellnow • E-mail: [timothy.sellnow@ucf.edu](mailto:timothy.sellnow@ucf.edu) • Nicholson School of Communication and Media, University of Central Florida, Orlando, FL 32816, USA

© 2019 by Journal of International Crisis and Risk Communication Research. All rights reserved.

demand a response, typically in the form of denial. More recently, hoaxes taking an inverse approach have appeared. Heavily trafficked Internet sites, such as InfoWars, have routinely distributed claims that some well-documented crises themselves are hoaxes. For example, conspiracy theorists have claimed that tragedies such as the Sandy Hook shooting were faked, that the Las Vegas shooting was accomplished by multiple gunmen, and that the students speaking out after the shooting in Parkland, Florida, along with the young immigrant children in tears after being separated from their parents at the Texas border were crisis actors (Criss, 2018; Rosenberg, 2018). Such claims of crises being hoaxes have become “common occurrences in the wake of national tragedy” (Snider, 2018, para. 3).

In this analysis, hoax claims that retrospectively challenge the existence of crises are referred to as *crisis denial*. Crisis denial is defined operationally as claims challenging the authenticity of widely viewed crises by depicting them as hoaxes. Although crisis denials may in many cases seem preposterous, they do create demands on the time and resources of organizations, agencies, and individuals attempting to respond to, recover from, and heal after tragedy. Moreover, these crisis denial claims can energize oppositional forces that resist policy changes inspired by the lessons learned from crisis events (Seeger & Sellnow, 2016). In doing so, we argue that crisis denial disrupts and delays the discourse of renewal. Renewal discourse inspires a prospective vision for ethical change based on the lessons learned from a crisis (Ulmer, Sellnow, & Seeger, 2018). Disrupting this process delays positive change and prolongs the suffering of those victimized by the crisis. Thus analyzing the role crisis denial plays in disrupting the renewal process and exploring options for minimizing such disruptions is warranted. This study reviews the discourse of renewal and the potential for its disruption or delay through information disorder. Information disorder in these cases can be created by denial claims portraying well-documented crises as hoaxes and the victims of these tragedies as inauthentic. We begin by reviewing the literature focusing on renewal discourse and the information disorder created by hoaxes. We then analyze three recent cases of crisis denial. We end with conclusions and implications, focusing on the challenges and potential solutions revealed in analysis.

## **Discourse of Renewal**

The discourse of renewal's focus on discovering opportunities for positive change in response to crises is a departure from much of the research in crisis communication (Ulmer & Sellnow, 2002). This theory has been applied in a wide variety of contexts, such as ruinous fires (Seeger & Ulmer, 2002), deadly product failures (Reiersen, Sellnow, & Ulmer, 2009), terrorist attacks (Seeger, Ulmer, Novak, & Sellnow, 2005), sexual abuse scandals (Maier & Crist, 2017), and school shootings (Littlefield, Reiersen, Cowden, Stowman, & Long Feather, 2009). The novel perspective of renewal discourse is based on two foundational principles. First is that crises serve an epistemic function by revealing failures in organizations, agencies, and communities, some of which are subtle and overlooked, others clearly evident and ignored prior to the crisis. Crises bring these failures, subtle or obvious, to the forefront, creating an exigence for change (Seeger & Griffin Padgett, 2010). Thus organizational renewal is distinct from other forms of organizational change that are based on subtler pressures. Second, a discourse of renewal is based on the assumption that organizations can and do act intentionally to change their internal functions and their surroundings. These actions are established and supported through a discourse based on good reasons for change. Lessons learned are garnered from the crisis and formed into a prospective vision for ethical change that is articulated to those who can enact the change through well-reasoned rhetorical exchange (Ulmer et al., 2018). The attention generated by the crisis typically creates a broad and attentive audience for the renewal discourse.

Four components are central to establishing a discourse of renewal (Ulmer et al., 2018). First, renewal is based on organizational learning. The changes advocated in the discourse must be based on the lessons learned through postcrisis reflection. Through the learning process, risks that were overlooked or ignored are identified, and recommendations for changes needed to address those risks are made. Second, renewal discourse is value based. For example, were some values of the organization or community violated by the actions preceding the crisis? Pursuing profit over safety is an example of distorted values. Third,



renewal discourse demands a prospective vision. To meet the demands of prospective vision, the organization or community must stress opportunities for moving forward and improving based on the lessons learned from the crisis. A prospective vision contrasts sharply with a retrospective vision, where postcrisis discussion is snarled in litigation and blame. Finally, renewal discourse is based on a rhetoric of good reasons for change that are established by leaders in the postcrisis effort. These leaders may be formally established, emergent, or both. Established leaders are often heads of organizations or elected officials. Emergent leaders are often victims of the crisis who step forward to advocate for their fellow citizens. In some crises, both established and emergent leaders simultaneously advocate for change (Ulmer et al., 2018).

Much of the research on renewal discourse has noted only limited controversy in the changes proposed in response to crises. The need for change in many of the cases analyzed is clear, and the audience actually demands that the changes occur. The changes are lauded, and little or no resistance occurs. Thus this analysis expands our understanding of renewal discourse by focusing on the potential for the prospective vision for change initiated in response to the crisis to be disrupted by opposing voices—in this case, crisis denial and distortion through claims that the crisis is a hoax.

## Hoaxes

Although hoaxes attacking an organization's reputation have received considerable attention from strategic communication scholars (Cheng & Cameron, 2018; Hearit, 2006; Ulmer et al., 2018; Veil, Sellnow, & Petrun, 2012; Weiner, 2006), less is known about hoaxes claiming the crises themselves either did not occur or did not occur in the manner described by government and media sources. In this section, we distinguish between hoaxes as crises and crises as hoaxes.

**Hoaxes as crises.** Historically, hoaxes were typically seen as singular attacks on specific organizations or structures. Hoaxers used false claims of organizational misdeeds or failings to tarnish the organization's reputation. Although companies know that the claims are false from their inception, the broad distribution of the hoax messages requires

a substantial crisis response (Veil et al., 2012). Even after providing evidence refuting the hoax claims, lingering concerns from some of the afflicted organization's publics can linger. By contrast, hoax claims in the form of bomb threats have also frequently disrupted businesses, schools, and government administration. In these cases, however, normality is restored after evacuations, searches, and an all-clear recommendation. Although these hoaxes are distracting and exact a financial toll, they are often quickly resolved (Bowman, 2004).

**Crises as hoaxes.** Although the strategic communication process of identifying hoax attacks as false claims and systematically disproving them is well established in the literature (Sellnow, Littlefield, Vidoloff, & Webb, 2009), much less is known about responding to false claims that portray actual crisis events, where observable damage is done and lives are lost, as hoaxes. In other words, strategic communication research is geared almost entirely toward fending off hoax attacks that threaten an organization's reputation. Conversely, false claims propagated by conspiracy theorists create an entirely new strategic communication challenge by taking the opposite position and claiming that bona fide crisis events and their victims are themselves a hoax. Conspiracy theorists have, for example, claimed that the Holocaust did not occur, the lunar landings were faked, the HIV/AIDS virus was created by the CIA, and the 9/11 Commission concealed evidence ("Conspiracy Theories," n.d.). More recently, hoax claims have been promulgated by conspiracy theorists questioning the existence of school shootings at Sandy Hook Elementary in Newtown, Connecticut, and the veracity of the survivors of the shooting at Marjory Stoneman Douglas High School in Parkland, Florida (Yglesias, 2018).

**Hoaxes as information disorder.** Considerable discussion currently focuses on *fake news*, defined as the broad distribution of "news articles that are intentionally and verifiably false" (Allcott & Gentzkow, 2017, p. 214). High exposure to such falsified news articles combined with low exposure to hard news or verifiable journalism contributes to perceptions that fake news is real (Balmas, 2014). Distributing such falsified accounts is often linked to a political objective, such as the defamation of one political candidate or policy in an effort to secure favor for an opposing candidate or policy. Hoax claims, by their nature,

are intentionally and verifiably false. Moreover, such claims lack impact unless they are strategically distributed to broad audiences. Wardle and Derakhshan (2017) argued, however, that claims such as those discussed in this analysis are better characterized as information disorder. We contend that hoax claims that deny well-documented crises create a level of information disorder that can disrupt the discourse of renewal.

Information disorder broadly encompasses “rumours, conspiracy theories and fabricated information” that, through digital connectivity, are broadly distributed and noticed due to their “shock value” (Wardle & Derakhshan, 2017, p. 10). Wardle and Derakhshan argued that the term *fake news* lacks precision because it conflates multiple forms of fabricated information. Alternatively, the term *information disorder* serves as an umbrella term for disinformation, misinformation, and malinformation. *Misinformation* makes false connections among facts and individuals but is not necessarily created to cause harm. Rumors or misinterpretation of facts are examples of misinformation. *Malinformation* differs in that it uses leaks, harassment, and hate speech with the intent of inflicting harm. Unlawfully obtaining e-mails from a political candidate and publicly sharing them or other information out of context is an example of malinformation. *Disinformation* includes elements of both misinformation and malinformation. Specifically, disinformation features false contexts, imposter content, and content that is manipulated or fabricated. High-profile hoaxes designed to influence perception or to disrupt business are examples of disinformation (Wardle & Derakhshan, 2017).

The capacity to share information at an “unprecedented speed and breadth” has manifested a “dark side” where disinformation “conceived in order to deliberately deceive or betray an audience” can be distributed with ease and broad impact (Kumar, West, & Leskovec, 2016, p. 591). Users of social media are often deceived into spreading disinformation through their online social networks (Tambuscio, Ruffo, Flammini, & Menczer, 2015). Thus advances in communication technology have intensified the spread of disinformation.

In short, disinformation is produced in a format intended for broad distribution and redistribution. Audiences then interpret the messages and respond or fail to respond according to the message content. When

these messages are designed to deny well-documented crisis events, the information disorder they manifest has the potential to disrupt the discourse of renewal. Thus changes designed to avoid similar crises and opportunities for survivors of the crisis to heal can be delayed or prevented.

### **Case Analysis**

Crisis denial often occurs even while the details of the crisis event are unknown, continues by disputing facts as they are revealed, and can form a divergence in the crisis narrative that lingers for years (Seeger & Sellnow, 2016). We provide three cases that reveal the form and function of crisis denial as information disorder causing disruption in the renewal process. This analysis applies the case study method to a recent set of cases exemplifying consistent strategies of crisis denial. In a 7-month period from February 2018 through August 2018, attempts to portray three well-established crises as hoaxes were widely featured in the national media. These cases include the shooting at Marjory Stoneman Douglas High School in Parkland, Florida; the video and photographic evidence of the emotional turmoil experienced by children of illegal immigrants separated from their families; and the peak of Alex Jones's long-standing claims that the Sandy Hook school shooting was staged. The same strategy of claiming that crisis actors were used to create or publicize the three crises was central in each case. The consistency of the time period and the claims made in each of these cases make them a viable set for analyzing the interaction between crisis denial and the renewal process.

An etic approach was used to analyze the three cases because renewal theory and the components of information disorder were clearly documented in existing literature. An etic analysis is informed by "conceptual categories provided by our disciplinary knowledge and theory" (Lindlof & Taylor, 2011, p. 95). Furthermore, Yin (2018) explained that case analyses can function as explanation building about "how" or "why" a "presumed set of causal sequences" (p. 179) function in given circumstances. For this study, the cases identified provide explanation for how hoax claims interact with or detract from the discourse of renewal

following a crisis. Yin explains that, ideally, these explanations “reflect some rhetorically significant propositions” or “critical insights” (p. 179).

This analysis views three similar cases through the combined lenses of information disorder and the discourse of renewal. Our objective is to extend the current understanding of renewal discourse by including the potential disruption caused by information disorder, particularly in the form of hoax claims. The cases provided here are three distinct examples of a consistent strategy employed to deny the veracity of claims made about crisis events. Each consistently makes claims that victims of crises featured in media coverage are crisis actors.

Evidence for each case is drawn from multiple print media sources providing consistent reporting of the statements made by the speakers featured in each of the three cases. Yin (2018) explained that “the phenomenon of interest may pertain to a behavioral or social event, with the converged finding implicitly assuming a *single reality*” (p. 129). Given our focus on the actual statements made by the speakers, our data set meets this expectation. In the Parkland case, the actual e-mail sent by the primary communicator was captured and shared through multiple print publications. For the immigrant children case, video evidence was also available to confirm the exact words used by the primary speaker. Finally, in the Alex Jones case, his statements were verified in videos, some of which have now been removed from YouTube and other public platforms.

### **Immigrant Children as Crisis Actors**

In June 2018, stories supported by emotionally charged photographs of young children in tears traumatized by being separated from their parents who were arrested as illegal immigrants resulted in 67% of Americans viewing the policy as unacceptable (CBS News, 2018). The separations increased dramatically in frequency and duration due to a policy shift by the Trump administration. The issue was quickly politicized, resulting in Democrats and some Republicans demanding the children be reunited with their parents. Conservative author and commentator Ann Coulter introduced a hoax claim into deliberation of the issue by labeling the children in the photographs “crisis actors.” In a segment on *Fox News*, Coulter said, “These child actors weeping

and crying on all the other networks 24/7 right now; do not fall for it, Mr. President. . . . I get very nervous about the president getting his news from TV” (Rosenberg, 2018, para. 4). She further elaborated her claim by contending, “These kids are being coached. . . . They’re given scripts to read by liberals. . . . Don’t fall for the actor children” (para. 11).

Coulter insisted that her claims were supported by a report in the *New Yorker*, however, she initially offered no specifics about the story to which she was referring. After being pressured to clarify her attribution to the *New Yorker*, Coulter referred reporters to a 2011 story written by Suketu Mehta, a New York University professor. Mehta’s *New Yorker* article told the story of an African woman seeking asylum in the United States. When asked about Coulter’s interpretation of his story, Mehta remarked, “Either she lied or she’s truly illiterate. . . . I was really shocked to see she is using my *New Yorker* piece, which has no child actors, no liberals toting scripts to be read by child actors” (Porter, 2018, paras. 8–9).

Public outcry over the separation of children from their families led President Trump to issue an executive order halting the practice shortly after Coulter made her comments. At the time of the executive order, more than 2,000 children separated from their parents in the previous 2 months were still not reunited (Reilly, 2018).

Ultimately, Coulter’s claims sought to influence the voice of leadership in the renewal process in response to public outcry about the separation of children and parents in the immigration crisis. Her direct message to the president of the United States from the desk of the *Fox News* program sought to alter or influence his rhetorical response. Coulter’s comments also conflicted with values of family that are paramount in both the crisis and the potential renewal process.

### **Parkland Students as Crisis Actors**

On February 14, 2018, 17 students were shot and killed at Marjory Stoneman Douglas High School in Parkland, Florida, by a former student (Madan, Rodriguez, Harris, & Vassolo, 2018). The tragedy of the event inspired an outpouring of sympathy for the families impacted by the crisis and fueled the ongoing debate about gun control in the United States. Students at Marjory Stoneman Douglas immediately began

speaking out in the wake of the tragedy, calling for reform aimed at diminishing gun violence. Within hours of their appearance in local and national media, opponents of gun control responded by labeling the students “crisis actors.”

Perhaps the most notable accusation that the Stoneman Douglas High School students were crisis actors came from Benjamin Kelly, district secretary for Florida state representative Shawn Harrison. Kelly sent an e-mail to a *Tampa Bay Times* reporter who had written a story including remarks from two outspoken Marjory Stoneman Douglas students, Emma Gonzalez and David Hogg. The two students had been critical of the National Rifle Association and existing firearm laws in a CNN interview. Kelly wrote that Gonzalez and Hogg “are not students here but actors that travel to various crisis [*sic*] when they happen” (Eltagouri, 2018, para. 5). The message was sent from his official work e-mail address. When the *Tampa Bay Times* contacted Kelly and asked him what support he could offer for his claims, he referred them to a YouTube conspiracy video that has since been removed (Leary & Wilson, 2018). The video claimed to show evidence that Hogg had appeared as a crisis actor for other crisis events (Eltagouri, 2018).

Once Kelly’s role in propagating the claim that the emotional commentary shared by Gonzalez and Hogg was part of a hoax was revealed, he was sternly criticized and swiftly fired by Florida House speaker Richard Corcoran, who oversees all House employees. Corcoran announced, “On behalf of the entire Florida House, I sincerely apologize to the students targeted and again commend them for their courage through this unspeakable tragedy” (Leary & Wilson, 2018, para. 11). Florida senator Marco Rubio joined Corcoran in criticizing Kelly and others who claimed the Parkland students were part of a hoax. Rubio tweeted, “Claiming some of the students on tv after #Parkland are actors is the work of a disgusting group of idiots with no sense of decency” (@marcorubio). Despite the condemnation of Kelly’s claims that the students were part of a hoax, such claims continued in posts by conservatives on social media. These posts articulated “absurd conspiracy theories that kids who just endured a horrifying assault are actually ‘crisis actors’ trained to stage ‘false flag’ events” (Rabin, 2018, para. 2).

Undeterred, the Parkland students continued their efforts to inspire



activism by demanding stronger gun control legislation. They organized a rally near Florida's capitol a week after the shooting in their high school. In support of the Parkland survivors, students across Florida joined in school walkouts as a protest against gun violence and a call for gun control legislation. The students then shifted their efforts to organize a March for Our Lives event that drew hundreds of thousands of young people to Washington, DC, in a unified call for gun control legislation (Gurney & Irby, 2018). They followed this initiative with a summer tour in 2018 to approximately 20 U.S. cities and every voting district in Florida. The goal of the tour was to "register young voters and promote gun law changes" (Madan & Wright, 2018, para. 1).

Kelley's claims momentarily disrupted the opportunity to acquire the information needed from those victimized by the crisis to establish lessons learned. Rather than focusing on identifying and learning from the failures preceding the Parkland attack, school officials and the victims themselves were forced to deny the hoax claims by asserting the obvious—Gonzalez and Hogg were indeed Parkland students.

### **Sandy Hook's Grieving Parents as Crisis Actors**

The 2012 Sandy Hook school shooting by a single gunman resulted in the deaths of 6 faculty and staff and 20 young children. The fact that so many children, some as young as 6 years old, were violently killed generated alarm and an extensive national discussion of gun control measures. Despite widespread public support for legislation banning some firearms and gun clips holding a large volume of bullets following the Sandy Hook crisis, the legislation was defeated in the U.S. Senate (Ray, 2018). Further disheartening for families touched by the Sandy Hook tragedy and their sympathizers were the discordant voices of conspiracy theorists claiming that the Sandy Hook crisis was a hoax. None were more strident, persistent, and pervasive than Alex Jones.

Within weeks after the shooting, prominent conspiracy theorist Alex Jones began broadcasting claims through his radio program and YouTube channel, InfoWars, that the Sandy Hook school shooting was a hoax. Jones claimed that the Sandy Hook tragedy was a false flag event created by the U.S. government using crisis actors to influence gun control legislation. For example, his video *Why People Think Sandy*



*Hook Is a Hoax* was posted on January 27, 2013, approximately 6 weeks after the shooting. This video is no longer available due to the account associated with it having been terminated by YouTube. His InfoWars videos elaborating on his claims that Sandy Hook was a hoax staged by “crisis actors” were viewed millions of times (Williamson, 2018b, para. 3).

Jones is a well-known conspiracy theorist. Using a talk show format featuring conspiracy theories ranging from Satanists taking over America to the government controlling the weather, Jones has built an audience of nearly 2 million subscribers (Killelea, 2017). His annual income from product sales, advertising, and subscription videos was, at its peak, estimated at \$10 million per year (Brown, 2017). Jones’s popularity inspired then candidate Donald Trump to appear on his InfoWars program prior to the election in 2016. After the election, Trump called Jones, thanking him for his support (Killelea, 2017). Jones claimed in his YouTube videos to have indisputable evidence that the Sandy Hook crisis was a hoax. Over a 5-year span, Jones interviewed guests who claimed Sandy Hook could not have happened as reported. He built his argument claiming that the parents, children, and police officers responding to the shooting were actually crisis actors. Jones identified these individuals by name, ridiculing them on his programs.

These claims resonated with Jones’s listeners and viewers. Court documents in a lawsuit filed against Jones noted that, as a result of his hoax claims that the crisis was, in his words, “synthetic, completely fake with actors, in my view, manufactured” and “families of the Sandy Hook victims have been stalked, threatened and subjected to online abuse by Mr. Jones’s followers” (Williamson, 2018a, para. 8). The parents of a child killed in the Sandy Hook shooting were forced to move to a different home seven times due to harassment from Jones’s followers after Jones criticized them by name on his broadcasts. Other families grieving the loss of their children in the shooting were subjected to “harassment, death threats, and personal attacks on social media” due to Jones’s claims (“Parents of Jewish,” 2018, para. 6). After being trolled viciously for years on social media by Jones’s followers, another grieving parent from Sandy Hook, Nelba Márquez-Greene, voiced her concern about a lack of action to stop the harassment. Márquez-Greene

observed, “It feels like Facebook is waiting for someone to die before something gets done” (as cited in Collins, 2018, para. 4).

In fall 2018, social media leaders YouTube, Facebook, and Twitter deemed that Jones had crossed the line of free speech and entered the forbidden category of hate speech. He was banned from all three platforms, and his videos and other content were removed. Several weeks after the ban, Jones’s InfoWars website dropped from an average of 1.4 million daily visits to approximately half that number (Nicas, 2018). Jones’s ability to market his products was also diminished when PayPal stopped processing payments for products marketed on InfoWars because Jones “violated their policies on promoting hate and violence” (InfoWars, 2018). Jones is also facing two defamation lawsuits against him filed by Sandy Hook parents. These lawsuits are moving through the courts despite Jones’s attempts to have them dismissed as a violation of his right to free speech (Martinez, 2018).

For these parents and many sympathizers, Alex Jones’s claims blocked the prospective message of renewal. Rather than moving forward toward a vision of resolution, Jones’s claims encouraged the opposite—a backward focus on blame and doubt.

Although different in their duration, all of the examples described herein are based on a similar claim: the crises are, at least in part, hoaxes propagated by parties who want to sway public sentiment about controversial legislative issues. Those suffering from the crises are featured by agents propagating false claims that these victims are actually crisis actors who are complicit in creating the hoax.

## **Conclusions and Implications**

As the preceding cases reveal, claiming the presence of crisis actors is an adaptable crisis denial strategy for various crisis stages and types. Coulter clouded the immigration issue at its peak with her claims, Kelly challenged the authenticity of firsthand witnesses in the Parkland crisis in the earliest stages, and Jones pushed sundry claims of crisis actors in the Sandy Hook tragedy for years after the crisis, only recently peaking in confrontation. Although Coulter, Kelly, and Jones may or may not have been the originators of these claims, each occupied a position of

visibility, allowing him or her to amplify the message to willing listeners.

At worst, the amplification of hoax claims disrupts the components essential for a discourse of renewal. Leadership, lessons learned, a prospective vision, and ethical decision-making are the essential components of renewal discourse. Coulter's appeal to the president to ignore the distraught children threatened to disengage the leadership needed for essential change. Essential lessons needed to resolve crises are also impeded by hoax claims. Kelly's disruption of the crisis recovery process momentarily threatened to stall learning about how the shooter accessed his weapons and how he was able to enter the school and elude an armed guard. Jones's relentless pursuit of his conspiracy theories about Sandy Hook suppressed the prospective vision needed for families to move forward after the crisis. Given the lack of proof provided by all three crisis deniers, the ethical integrity of their words is questionable. Thus hoax claims have the potential to confuse, disrupt, or even deny the crisis renewal process. Without renewal, crises can linger as divisive, disempowering, and depressing tragedies that remain unhealed for communities and countries.

At minimum, the disruption created by hoax claims delays or distracts the discourse of renewal. Community leaders, legislators, journalists, and others are at least momentarily distracted from communicating fact-based accounts of the crises, expressions of remorse, and a vision for recovery. Coulter's claims cast doubt on the events and required time for fact-checking. Legislators in Florida were distracted by Kelly's false claims—time was needed to briefly investigate his actions and formally remove him from his position. Jones's long-standing claims added a cruel distraction that extenuated the grief and likely extended recovery time for family members and the Newtown community. In effect, these claims, at least temporarily, create a burden of proof that otherwise would not exist. Time and resources that could be used by organizations to help facilitate the crisis coping process (see Jin, Liu, & Austin, 2014) are diverted to "prove" the obvious: Immigrant children are immigrant children, students witnessing a shooting in their school are students at their school, and children who died in a school shooting were born and did attend the school. Time lost in the renewal process creates an unnecessary extension of pain, delay in the

recovery from crises, and an overall coarsening of the renewal process.

More subtly, crisis denial has the capacity to create a diversion for community leaders and legislators that can shield them during the most intense moments of public outrage from discussions of potentially controversial change. Being able to engage in chastising conspiracy theorists allows public officials to participate in the conversation without actually engaging in the renewal process. Instead of talking about how to limit the problem through future policies, they can talk about how livid they are at seeing the insensitivity and inappropriateness of crisis deniers harassing victims. Such commentary is potentially rewarding to their images without risking the controversy of discussing legislation on such matters as gun control or immigration. Legislators in Florida, for example, were able to publicly denounce Kelly without establishing a prospective vision of renewal.

### **Implications**

Much can be said about the potential for hoax claims to derail the renewal process. This vulnerability, however, does not create helplessness. Steps can be taken to achieve renewal in the wake of hoax claims. Corporate social responsibility is one means by which hoax claims can be confronted. Apple, Facebook, YouTube, Twitter, and PayPal have, for example, confronted Alex Jones and his InfoWars financial empire by denying him access to their platforms. After being denied access, Jones claimed, “The more I’m persecuted, the stronger I get” (Nicas, 2018, para. 2). Indeed, after he was removed from these platforms, his website did see a flurry of activity. This surge in interest has since steadily diminished. When agents attack or dehumanize innocent victims of crises through crisis denial, refusing such agents access to platforms needed to amplify their hoax claims constitutes corporate social responsibility and should be encouraged. The potential for organizations to take such actions in the future is bolstered by the fact that organizations initiating socially responsible actions on matters where the publics are highly engaged tend to see an increase in customer support and commitment (Kim & Lee, 2012). Hence visible actions to confront hoaxers can be both virtuous and a wise business move.

Hoax claims, in their most extreme cases, are not without legal

ramifications. Hoaxers who cross the line between free speech and defamation are subject to litigation. Alex Jones's pursuit of grieving Sandy Hook parents crossed this line by verbally attacking parents by name as well as broadcasting their home addresses to his supporters. That these parents' lawsuits against Jones are proceeding through the courts despite his legal protests suggests that hoaxers who attack victims can be sued for defamation.

The indirect advantage of shielding legislators from candidly discussing the context of a crisis can also be addressed. Citizens and journalists can and should recognize and respond to legislators who denounce hoaxers without actually discussing the issue at hand. After all, the prevalence of claims that crises are propagated by crisis actors is not the primary issue. In the cases analyzed for this study, the primary issues are immigration and gun violence. Public and political discourse must focus on the issues themselves for renewal to occur.

Finally, ongoing efforts to enhance the American population's ability to recognize false claims or fake news should continue. With improved media literacy, viewers can more readily identify and disregard hoax claims built on unsubstantiated assertions. Considerable research is under way to better understand how best to warn viewers of fabricated news. Social media platforms have also begun to respond through the development of a more sophisticated filtering system. All of these actions are warranted and should be encouraged.

## **Conclusion**

Crisis deniers have the distinct ability to deny the fresh sense of purpose inspired by a discourse of renewal. Sadly, these denials shift public debate away from renewal and toward a self-serving diversion from finding long-term solutions to prevailing problems. Recognizing the potential for such claims to do harm, particularly to innocent victims, is a step in the right direction. Purveyors of elaborate, unsubstantiated conspiracy theories, denying everything from lunar landings to the shape of Earth, may have once seemed harmless or even entertaining (Sheridan, 2018). Those amplifying messages that deny the authenticity of well-documented crises, however, have the potential to disrupt personal and community-wide healing and to delay or derail the development of positive solutions to recurring crises.

**Timothy L. Sellnow**, PhD, is a professor and director of graduate studies in the Nicholson School of Communication and Media at the University of Central Florida. He teaches courses in risk communication, crisis communication, and communication theory. His research focuses on crisis response and planning as well as message design for instructional risk communication.

**Adam J. Parrish**, PhD, is a lecturer in the Nicholson School of Communication and Media at the University of Central Florida. He teaches courses in health communication, organizational communication, communication theory, and other subjects. Dr. Parrish's research focuses on risk communication and persuasive message design to promote men's health.

**Lauren Semenas** recently graduated with her bachelor's degree in advertising and public relations from the Nicholson School of Communication and Media at the University of Central Florida. She is currently employed as a public relations professional.

## ORCID

Timothy L. Sellnow  <http://orcid.org/0000-0001-5353-4629>

## References

- Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, 31, 211–236. <https://doi.org/10.1257/jep.31.2.211>
- Balmas, M. (2014). When fake news becomes real: Combined exposure to multiple news sources and political attitudes of inefficacy, alienation, and cynicism. *Communication Research*, 41, 430–454. <https://doi.org/10.1177/0093650212453600>
- Bowman, D. H. (2004, October). Bomb threats taking financial toll. *Education Week*, 24, 22–23.
- Brown, S. (2017, May 4). Alex Jones's media empire is a machine built to sell snake-oil diet supplements. *New York Magazine*. Retrieved from <http://nymag.com/selectall/2017/05/how-does-alex-jones-make-money.html>

- Burbank, L. (2006, January 19). Wendy's still smarting from finger-in-chili hoax. *National Public Radio*. Retrieved from <https://www.npr.org/templates/story/story.php?storyId=5163399>
- CBS News. (2018, June 18). *Poll: Two-thirds of Americans say separating children, parents at border unacceptable*. Retrieved from <https://www.cbsnews.com/news/two-thirds-of-americans-say-separating-children-parents-at-border-unacceptable/>
- Cheng, Y., & Cameron, G. (2018). The status of social-mediated crisis communication (SMCC) research: An analysis of published articles in 2002–2014. In L. Austin & Y. Jin (Eds.), *Social media and crisis communication* (pp. 9–20). New York, NY: Routledge.
- Clifford, S. (2009, April 15). Video prank at Domino's taints brand. *New York Times*. Retrieved from <http://www.nytimes.com/2009/04/16/business/media/16dominos.html>
- Collins, B. (2018, July 19). *After years of "crisis actor" smears, Sandy Hook conspiracy targets ask Facebook for "seat at the table."* Retrieved from <https://www.nbcnews.com/tech/tech-news/after-years-crisis-actor-smears-sandy-hook-conspiracy-targets-ask-n892926>
- Conspiracy theories. (n.d.). *Time*. Retrieved from <http://content.time.com/time/specials/packages/completelist/0,29569,1860871,00.html>
- Criss, D. (2018, February 21). *The mass shooting conspiracy theories that just won't go away (and why they should)*. Retrieved from <https://www.cnn.com/2018/02/21/us/mass-shootings-conspiracy-theories-trnd/index.html>
- Eltagouri, M. (2018, February 20). A lawmaker's aid called school-shooting survivors crisis actors. Within hours, he was fired. *Washington Post*. Retrieved from <https://www.washingtonpost.com/news/politics/wp/2018/02/20/a-lawmakers-aide-called-school-shooting-survivors-actors-within-hours-he-was-fired/>
- Gurney, K., & Irby, K. (2018, March 24). Packed crowds, loud noises: Parkland students confront emotional stress of march. *Miami Herald*. Retrieved from <https://www.miamiherald.com/news/local/community/broward/article206724234.html>
- Hearit, K. M. (2006). *Crisis management by apology: Corporate response to allegations of wrongdoing*. New York, NY: Routledge.
- InfoWars publisher Alex Jones sues PayPal*. (2018, October 2). Retrieved from <https://www.bbc.com/news/technology-45719245>
- Jin, Y., Liu, B. F., & Austin, L. L. (2014). Examining the role of social media

- in effective crisis management: The effects of crisis origin, information form, and source on publics' crisis responses. *Communication Research*, 41, 74–94. <https://doi.org/10.1177/2Fo093650211423918>
- Killelea, E. (2017, February 21). Alex Jones' mis-infowars: 7 bat-sh\*t conspiracy theories. *Rolling Stone*. Retrieved from <https://www.rollingstone.com/culture/culture-lists/alex-jones-mis-infowars-7-bat-sht-conspiracy-theories-195468/>
- Kim, S., & Lee, Y. J. (2012). The complex attribution process of CSR motives. *Public Relations Review*, 38, 168–170. <https://doi.org/10.1016/j.pubrev.2011.09.024>
- Kumar, S., West, R., & Leskovec, J. (2016, April). Disinformation on the web: Impact, characteristics, and detection of Wikipedia hoaxes. In *Proceedings of the 25th international conference on the World Wide Web* (pp. 591–602). Montreal, QC: International World Wide Web Conferences Steering Committee.
- Leary, A., & Wilson, K. (2018, February 20). Florida lawmaker's aide fired after saying outspoken Parkland students are actors. *Tampa Bay Times*. Retrieved from <http://www.tampabay.com/florida-politics/buzz/2018/02/20/parkland-students-come-under-attack-for-their-outspokenness/>
- Lindlof, T. R., & Taylor, B. C. (2011). *Qualitative communication research methods* (3rd ed.). Thousand Oaks, CA: Sage.
- Littlefield, R. S., Reiersen, J., Cowden, K., Stowman, S., & Long Feather, C. (2009). A case study of the Red Lake, Minnesota, school shooting: Intercultural learning in the renewal process. *Communication, Culture, and Critique*, 2, 361–383. <https://doi.org/10.1111/j.1753-9137.2009.01043.x>
- Madan, M. O., Rodriguez, R., Harris A., & Vassolo, M. (2018, February 15). The victims of the Douglas high mass shooting. *Miami Herald*. Retrieved from <https://www.miamiherald.com/news/local/community/broward/article200220844.html>
- Madan, M., & Wright, C. (2018, June 3). Parkland shooting survivors to embark on a summer tour. *Miami Herald*. Retrieved from <https://www.miamiherald.com/news/local/community/broward/article212453509.html>
- Maier, C., & Crist, J. R. (2017). From “wicked crisis” to responsive witness: Jean-Luc Marion and the American Roman Catholic sexual-abuse scandal. *Southern Journal of Communication*, 82, 164–174. <https://doi.org/10.1080/1041794X.2017.1315453>
- Martinez, G. (2018, August 31). Sandy Hook parents' defamation lawsuit against



- Alex Jones can continue, judge rules. *Time*. Retrieved from <http://time.com/5383618/alex-jones-defamation-suit/>
- Nicas, J. (2018, September 4). Alex Jones said bans would strengthen him. He was wrong. *New York Times*. Retrieved from <https://www.nytimes.com/2018/09/04/technology/alex-jones-infowars-bans-traffic.html>
- Parents of Jewish Sandy Hook victim forced to move 7 times due to harassment. (2018, August 1). *Times of Israel*. Retrieved from <https://www.timesofisrael.com/parents-of-jewish-sandy-hook-victim-forced-to-move-7-times-due-to-harassment/>
- Porter, T. (2018, June 19). Ann Coulter claims crying immigrant children are “child actors,” but author she cited slams her as “illiterate.” *Newsweek*. Retrieved from <https://www.newsweek.com/ann-coulter-claims-crying-children-crisis-actors-author-she-slams-her-983497>
- Rabin, C. (2018, February 20). Parkland students face new attack, this time from the political right on social media. *Miami Herald*. Retrieved from <https://www.miamiherald.com/news/local/article201177359.html>
- Ray, M. (2018). Sandy Hook Elementary School shooting. *Encyclopedia Britannica*. Retrieved from <https://www.britannica.com/event/Newtown-shootings-of-2012>
- Reiersen, J. L., Sellnow, T. L., & Ulmer, R. R. (2009). Complexities of crisis renewal over time: Learning from the case of tainted Odwalla apple juice. *Communication Studies*, 60, 114–129. <https://doi.org/10.1080/10510970902834841>
- Reilly, K. (2018, June 16). Nearly 2,000 children have been separated from their families during Trump border crackdown. *Time*. Retrieved from <http://time.com/5314128/trump-immigration-family-separation-2000-children/>
- Rosenberg, E. (2018, June 18). Migrant kids are “child actors,” Ann Coulter says on Fox News, telling Trump not to be fooled. *Washington Post*. Retrieved from <https://www.washingtonpost.com/news/arts-and-entertainment/wp/2018/06/18/migrant-kids-are-child-actors-ann-coulter-says-on-fox-news-telling-trump-not-to-be-fooled/>
- Seeger, M. W., & Griffin Padgett, D. R. (2010). From image restoration to renewal: Approaches to understanding postcrisis communication. *Review of Communication*, 10, 127–141. <https://doi.org/10.1080/15358590903545263>
- Seeger, M. W., & Sellnow, T. L. (2016). *Narratives of crisis: Telling the stories of ruin and renewal*. Stanford, CA: Stanford University Press.

- Seeger, M., & Ulmer, R. (2002). A post-crisis discourse of renewal: The cases of Malden Mills and Cole Hardwoods. *Journal of Applied Communication Research*, 30, 126–142. <https://doi.org/10.1080/00909880216578>
- Seeger, M. W., Ulmer, R. R., Novak, J. M., & Sellnow, T. L. (2005). Post-crisis discourse and organizational change, failure and renewal. *Journal of Organizational Change Management*, 18, 78–95. <https://doi.org/10.1108/09534810510579869>
- Sellnow, T. L., Littlefield, R. S., Vidoloff, K. G., & Webb, E. M. (2009). The interacting arguments of risk communication in response to terrorist hoaxes. *Argumentation and Advocacy*, 45, 135–149. <https://doi.org/10.1080/00028533.2009.11821703>
- Sheridan, K. (2018, April 17). Flat Earth, illuminati, and fake moon landing: Are conspiracy theory videos hurting YouTube? *Newsweek*. Retrieved from <https://www.newsweek.com/2018/04/27/flat-earth-illuminati-fake-moon-landing-conspiracy-theory-videos-youtube-889854.html>
- Snider, M. (2018, February 15). Florida school shooting hoax: Doctored tweets and Russian bots spread false news. *USA Today*. Retrieved from <https://www.usatoday.com/story/tech/news/2018/02/15/florida-school-shooting-doctored-tweets-russian-bots-and-hoaxes-spread-false-news/340349002/>
- Tambuscio, M., Ruffo, G., Flammini, A., & Menczer, F. (2015, May). Fact-checking effect on viral hoaxes: A model of misinformation spread in social networks. In *Proceedings of the 24th International Conference on World Wide Web* (pp. 977–982). New York, NY: ACM.
- Ulmer, R. R., & Sellnow, T. L. (2002). Crisis management and the discourse of renewal: Understanding the potential for positive outcomes of crisis. *Public Relations Review*, 28, 361–365. [https://doi.org/10.1016/S0363-8111\(02\)00165-0](https://doi.org/10.1016/S0363-8111(02)00165-0)
- Ulmer, R. R., Sellnow, T. L., & Seeger, M. W. (2018). *Effective crisis communication: Moving from crisis to opportunity* (4th ed.). Thousand Oaks, CA: Sage.
- Veil, S. R., Sellnow, T. L., & Petrun, E. L. (2012). Hoaxes and the paradoxical challenges of restoring legitimacy: Domino's response to its YouTube crisis. *Management Communication Quarterly*, 26, 322–345. <https://doi.org/10.1177/0893318911426685>
- Wardle, C., & Derakhshan, H. (2017, September 27). *Information disorder: Toward an interdisciplinary framework for research and policy making* (F-67075 Strasbourg Cedex). Council of Europe. Retrieved from <https://>

- rm.coe.int/information-disorder-toward-an-interdisciplinary-framework-for-research/168076277c
- Weiner, D. (2006). Crisis communications: Managing corporate reputation in the court of public opinion. *Ivey Business Journal*, 70, 1–6.
- Williamson, E. (2018a, August 17). Alex Jones of Infowars destroyed evidence related to Sandy Hook suits, motion says. *New York Times*. Retrieved from <https://www.nytimes.com/2018/08/17/us/politics/alex-jones-evidence-infowars.html>
- Williamson, E. (2018b, August 30). Judge rules against Alex Jones and Infowars in Sandy Hook lawsuit. *New York Times*. Retrieved from <https://www.nytimes.com/2018/08/30/us/politics/alex-jones-infowars-sandy-hook-lawsuit.html>
- Yglesias, M. (2018, February 22). The Parkland conspiracy theories, explained. *Vox*. Retrieved from <https://www.vox.com/policy-and-politics/2018/2/22/17036018/parkland-conspiracy-theories>
- Yin, R. K. (2018). *Case study research and applications: Design and methods* (6th ed.). Thousand Oaks, CA: Sage.